

STIC Search Report

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STIC Database Tracking Number: 219218

TO: Ben Sackey
Location: rem/5B31/5C18
Art Unit: 1624
Thursday, March 29, 2007
Case Serial Number: 10/717846

From: Les Henderson
Location: Biotech-Chem Library
REM-1B61
Phone: (571)272-2538

leslie.henderson@uspto.gov

Search Notes

Results can also be viewed via SCORE or eDAN.

<http://es/ScoreAccessWeb/>

To access your search results for SN 10/717846 via eDAN.

In eDAN:

Enter Application number

Click on Supplemental Content Tab ->

Sequence results are under the **Search Results** (click on version listed)

All other results are under **Other Content** (click on version listed)

STIC SEARCH RESULTS FEEDBACK FORM

Biotech-Chem Library

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Mary Hale, Information Branch Supervisor
571-272-2507 Remsen 1 A51

Voluntary Results Feedback Form

➤ I am an examiner in Workgroup: Example: 1610

➤ Relevant prior art **found**, search results used as follows:

- ☐ 102 rejection
- ☐ 103 rejection
- ☐ Cited as being of interest.
- ☐ Helped examiner better understand the invention.
- ☐ Helped examiner better understand the state of the art in their technology.

Types of relevant prior art found:

- ☐ Foreign Patent(s)
- ☐ Non-Patent Literature
(journal articles, conference proceedings, new product announcements etc.)

➤ Relevant prior art **not found**:

- ☐ Results verified the lack of relevant prior art (helped determine patentability).
- ☐ Results were not useful in determining patentability or understanding the invention.

Comments:

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3-13/16

ACCESS DB #

219218

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Scientific and Technical Information Center

SEARCH REQUEST FORM

Requester's Full Name: BEN SACKLEY Examiner #: 13489 Date: 3/23/07
Art Unit: 1624 Phone Number: 2-0704 Serial Number: 10/717,846
Location (Bldg/Room#): REM 5B3 (Mailbox #): 5618 Results Format Preferred (circle): PAPER DISK

To ensure an efficient and quality search, please attach a copy of the cover sheet, claims, and abstract or fill out the following:

Title of Invention: Catalyst for the manufacture of acrylonitrile
Inventors (please provide full names): Christos Papavizos

Earliest Priority Date: 12/02/02

Search Topic:

Please provide a detailed statement of the search topic, and describe as specifically as possible the subject matter to be searched. Include the elected species or structures, keywords, synonyms, acronyms, and registry numbers, and combine with the concept or utility of the invention. Define any terms that may have a special meaning. Give examples or relevant citations, authors, etc., if known.

For Sequence Searches Only Please include all pertinent information (parent, child, divisional, or issued patent numbers) along with the appropriate serial number.

A catalyst composition comprising a complex of catalytic oxides comprising potassium, cesium, cerium, chromium, cobalt, nickel, iron, bismuth and molybdenum, wherein the relative ratios of these elements are represented by formula $A_k K_b C_{sc} C_{ed} C_{re} C_{of} Ni_g X_h Fe_i Bi_j Mo_{1/2} O_x$ wherein A is Rb, Na, Li, Tl or mixtures thereof; and a method of preparing acrylonitrile using the said catalyst composition.

10/717,846

The claimed invention is:

1. A catalyst composition comprising a complex of catalytic oxides comprising potassium, cesium, cerium, chromium, cobalt, nickel, iron, bismuth, and molybdenum, wherein the relative ratios of these elements are represented by the following general formula



wherein A is Rb, Na, Li, Tl, or mixtures thereof,

X is P, Sb, Te, B, Ge, W, Ca, Mg, a rare earth element, or mixtures thereof,

a is about 0 to about 1,

b is about 0.01 to about 1,

c is about 0.01 to about 1,

d is about 0.01 to about 3,

e is about 0.01 to about 2,

f is about 0.01 to about 10,

g is about 0.1 to about 10,

h is about 0 to about 4,

i is about 0.1 to about 4,

j is about 0.05 to about 4,

x is a number determined by the valence requirements of the other elements present,

and wherein the catalyst is substantially free of manganese and zinc.

2. The catalyst composition of claim 1, wherein the catalyst comprises phosphorus.

3. The catalyst composition of claim 1, wherein the catalyst comprises magnesium.

4. The catalyst composition of claim 1, wherein the catalyst is substantially free of magnesium.

5. The catalyst composition of claim 1, wherein the catalyst comprises rubidium.

6. The catalyst composition of claim 1, wherein the catalyst comprises lithium.

7. The catalyst composition of claim 1, wherein $f + g$ is about 4 to about 10.

8. The catalyst composition of claim 1, wherein the catalyst composition comprises a support selected from the group consisting of silica, alumina, zirconium, titania, or mixtures thereof.

9. The catalyst composition of claim 8, wherein the support comprises between 30 and 70 weight percent of the catalyst.

10. The catalyst composition of claim 1, wherein the catalyst composition comprises silica having an average colloidal particle size in between about 8 nm and about 100 nm.

11. A catalyst composition comprising a complex of catalytic oxides comprising potassium, cesium, cerium, chromium, cobalt, nickel, iron, bismuth, and molybdenum, wherein the relative ratios of these elements are represented by the following general formula



10 wherein A is Rb, Na, Tl, or mixtures thereof,

X is P, Sb, Te, B, Ge, W, Ca, Mg, a rare earth element, or mixtures thereof,

a is about 0 to about 1,

a' is about 0.01 to about 1,

15 b is about 0.01 to about 1,

c is about 0.01 to about 1,

d is about 0.01 to about 3,

e is about 0.01 to about 2,

f is about 0.01 to about 10,

20 g is about 0.1 to about 10,

h is about 0 to about 4,

i is about 0.1 to about 4,

j is about 0.05 to about 4,

25 x is a number determined by the valence requirements of the other elements present,

and wherein the catalyst is substantially free of manganese and zinc.

12. The catalyst composition of claim 11, wherein $f + g$ is about 4 to about 10.

13. A process for the conversion of an olefin selected from the group consisting of propylene, isobutylene or mixtures thereof, to acrylonitrile, methacrylonitrile, and mixtures thereof, respectively, by reacting in the vapor phase at an elevated temperature and pressure said olefin with a molecular oxygen containing gas and ammonia in the presence of a catalyst comprising a complex of catalytic oxides comprising potassium, cesium, cerium, chromium,

30

cobalt, nickel, iron, bismuth, molybdenum, wherein the relative ratios of these elements are represented by the following general formula



wherein A is Rb, Na, Li, Tl, or mixtures thereof,

5 X is P, Sb, Te, B, Ge, W, Ca, Mg, a rare earth element, or mixtures thereof,

a is about 0 to about 1,

b is about 0.01 to about 1,

c is about 0.01 to about 1,

10 d is about 0.01 to about 3,

e is about 0.01 to about 2,

f is about 0.01 to about 10,

g is about 0.1 to about 10,

h is about 0 to about 4,

15 i is about 0.1 to about 4,

j is about 0.05 to about 4,

x is a number determined by the valence requirements of the other elements present,

and wherein the catalyst is substantially free of manganese and zinc.

20 14. The process of claim 13, wherein the catalyst comprises phosphorus.

15. The process of claim 13, wherein the catalyst comprises magnesium.

16. The process of claim 13, wherein the catalyst comprises rubidium.

17. The process of claim 13, wherein the catalyst comprises lithium.

18. The catalyst composition of claim 13, wherein $f + g$ is about 4 to about 10.

25 19. The process of claim 13, wherein the catalyst composition comprises a support selected from the group consisting of silica, alumina, zirconium, titania, or mixtures thereof.

20. The process of claim 19, wherein the support comprises between 30 and 70 weight percent of the catalyst.

30 21. The process of claim 13, wherein the catalyst composition comprises silica having an average colloidal particle size in between about 8 nm and about 100 nm.

10/717846

INVENTOR SEARCH

=> d his 160

(FILE 'HCAPLUS' ENTERED AT 11:58:44 ON 28 MAR 2007)

L60 24 S L59 AND L50

=> d que 160

L10 QUE ABB=ON PLU=ON JEVNE S?/AU
L11 QUE ABB=ON PLU=ON SEELY M?/AU
L12 QUE ABB=ON PLU=ON "STANDARD OIL CO?"/PA,CS,SO,CO
L13 QUE ABB=ON PLU=ON "INNOVENE USA?"/PA,CS,SO,CO
L14 QUE ABB=ON PLU=ON PAPARIZOS C?/AU
L16 QUE ABB=ON PLU=ON (L10 OR L11) OR L14
L22 45 SEA FILE=HCAPLUS ABB=ON PLU=ON L16 AND ((L12 OR
L13))
L23 635119 SEA FILE=HCAPLUS ABB=ON PLU=ON CATALYSTS+PFT,OLD,NT/CT
L24 35 SEA FILE=HCAPLUS ABB=ON PLU=ON L22 AND L23
L26 1 SEA FILE=REGISTRY ABB=ON PLU=ON 107-13-1/RN
L27 98560 SEA FILE=HCAPLUS ABB=ON PLU=ON L26 OR ACRYLONITRILE
OR ACRYLON
L28 14 SEA FILE=HCAPLUS ABB=ON PLU=ON L24 AND L27
L46 29606 SEA FILE=HCAPLUS ABB=ON PLU=ON ACRYLONITRILE+PFT,OLD,
NT/CT
L50 QUE ABB=ON PLU=ON PY<2003 OR PRY<2003 OR AY<2003 OR
MY<2003 OR REVIEW/DT
L58 23 SEA FILE=HCAPLUS ABB=ON PLU=ON L16 AND L23 AND L46
L59 24 SEA FILE=HCAPLUS ABB=ON PLU=ON L28 OR L58
L60 24 SEA FILE=HCAPLUS ABB=ON PLU=ON L59 AND L50

=> d his 162

(FILE 'RAPRA, WPIX' ENTERED AT 12:00:11 ON 28 MAR 2007)

L62 27 S L61 AND L50

=> d que 162

L10 QUE ABB=ON PLU=ON JEVNE S?/AU
L11 QUE ABB=ON PLU=ON SEELY M?/AU
L14 QUE ABB=ON PLU=ON PAPARIZOS C?/AU
L15 QUE ABB=ON PLU=ON L10 AND L11 AND L14
L16 QUE ABB=ON PLU=ON (L10 OR L11) OR L14
L50 QUE ABB=ON PLU=ON PY<2003 OR PRY<2003 OR AY<2003 OR
MY<2003 OR REVIEW/DT
L52 2 SEA L15
L54 72 SEA L16
L55 63 SEA L54 AND (CAT OR CATAL?)
L57 28 SEA L55 AND (?NITRIL? OR ACRYLON?)
L61 28 SEA L57 OR L52
L62 27 SEA L61 AND L50

=> dup rem 160 162

FILE 'HCAPLUS' ENTERED AT 12:40:15 ON 28 MAR 2007

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PLEASE SEE "HELP USAGETERMS" FOR DETAILS.

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FILE 'WPIX' ENTERED AT 12:40:15 ON 28 MAR 2007

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PROCESSING COMPLETED FOR L60

PROCESSING COMPLETED FOR L62

L68 32 DUP REM L60 L62 (19 DUPLICATES REMOVED)

ANSWERS '1-24' FROM FILE HCAPLUS

ANSWERS '25-32' FROM FILE WPIX

=> d 168 1-32 ibib ab

L68 ANSWER 1 OF 32 HCAPLUS COPYRIGHT 2007 ACS on STN DUPLICATE 1
 ACCESSION NUMBER: 2004:473398 HCAPLUS Full-text
 DOCUMENT NUMBER: 141:24128
 TITLE: Ammoxidation catalysts for the manufacture of acrylonitrile from propylene
 INVENTOR(S): **Paparizos, Christos; Jevne, Stephen C.; Seely, Michael J.**
 PATENT ASSIGNEE(S): USA
 SOURCE: U.S. Pat. Appl. Publ., 7 pp.
 CODEN: USXXCO
 DOCUMENT TYPE: Patent
 LANGUAGE: English
 FAMILY ACC. NUM. COUNT: 1
 PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
US 2004110978	A1	20040610	US 2003-717846	2003 1119
CA 2507182	A1	20040617	CA 2003-2507182	2003 1119
WO 2004050240	A1	20040617	WO 2003-US36937	2003 1119
W: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, GR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, UZ, VC, VN, YU, ZA, ZM, ZW RW: BW, GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZM, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM, AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IT, LU, MC, NL, PT, RO, SE, SI, SK, TR, BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG				
AU 2003295643	A1	20040623	AU 2003-295643	2003 1119
EP 1567263	A1	20050831	EP 2003-786844	2003 1119
BR 2003016852	A	20051018	BR 2003-16852	2003 1119
CN 1720099	A	20060111	CN 2003-80104882	2003 1119
JP 2006507936	T	20060309	JP 2004-557222	2003

1119

IN 2005MN00669

A

20050930

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IN 2005-MN6692005
0624

PRIORITY APPLN. INFO.:

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US 2002-430162P

P

2002
1202<--
US 2003-717846

A

2003
1119

WO 2003-US36937

W

2003
1119

AB A catalyst comprising a complex of catalytic oxides comprising potassium, cesium, cerium, chromium, cobalt, nickel, iron, bismuth, molybdenum, wherein the relative ratios of these elements is AaKbCscCedCreCofNigXhFeiBijMol2Ox (A = Rb, Na, Li, Tl; X = P, Sb, Te, B, Ge, W, Ca, Mg, a rare earth element;; a = 0-1; b = 0.01-1; c = 0.01-1; d = 0.01-3; e = 0.01-2; f = 0.01-10; g = 0.1-10; h = 0-4; i = 0.1-4; j = 0.05-4; x = number determined by the valence requirements of the other elements present) which is substantially free of manganese and zinc, is used for the conversion of propylene into acrylonitrile.

L68 ANSWER 2 OF 32 HCAPLUS COPYRIGHT 2007 ACS on STN DUPLICATE 2

ACCESSION NUMBER: 2004:451677 HCAPLUS Full-text

DOCUMENT NUMBER: 141:7648

TITLE: Ammoxidation catalyst for acrylonitrile manufacture

INVENTOR(S): **Paparizos, Christos; Jevne, Stephen C.; Seely, Michael J.**

PATENT ASSIGNEE(S): The Standard Oil Company, USA

SOURCE: U.S. Pat. Appl. Publ., 9 pp.

CODEN: USXXCO

DOCUMENT TYPE: Patent

LANGUAGE: English

FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
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US 2004106817	A1	20040603	US 2003-717130	2003 1118
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US 7071140	B2	20060704		
CA 2507181	A1	20040617	CA 2003-2507181	2003 1119
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WO 2004050238	A1	20040617	WO 2003-US36940	2003 1119

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RW: BW, GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZM, ZW,

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AM, AZ, BY, KG, KZ, MD, RU, TJ, TM, AT, BE, BG, CH, CY,
CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IT, LU, MC,
NL, PT, RO, SE, SI, SK, TR, BF, BJ, CF, CG, CI, CM, GA,
GN, GQ, GW, ML, MR, NE, SN, TD, TG

AU 2003291572	A1	20040623	AU 2003-291572	2003 1119
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BR 2003016851	A	20051018	BR 2003-16851	2003 1119
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EP 1590083	A1	20051102	EP 2003-768979	2003 1119
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CN 1723083	A	20060118	CN 2003-80104883	2003 1119
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JP 2006507937	T	20060309	JP 2004-557223	2003 1119
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IN 2005MN00672	A	20050930	IN 2005-MN672	2005 0627
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PRIORITY APPLN. INFO.:		US 2002-430163P	P	2002 1202
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		US 2003-717130	A	2003 1118
<--				
		WO 2003-US36940	W	2003 1119

AB The present invention relates to a catalyst comprising a complex of catalytic oxides comprising rubidium, cerium, chromium, iron, bismuth, molybdenum, and ≥ 1 of nickel or nickel and cobalt, optionally magnesium, and optionally one of phosphorus, antimony, tellurium, sodium, lithium, potassium, cesium, thallium, boron, germanium, tungsten calcium, wherein the relative ratios of these elements are represented by $Rb_aCe_bCr_cMg_dAl_eFe_fBi_gY_hMn_{12}O_x$, wherein A = Ni or the combination of Ni and Co; Y = ≥ 1 of P, Sb, Te, Li, Na, K, Cs, Tl, B, Ge, W, Ca, Zn, a rare earth element, or mixts. thereof; a = 0.01-1; b = 0.01-3; c = 0.01-2; d = 0-7; e = 0.01-10; f = 0.01-4; g = 0.05-4; h = 0-3; x = a number determined by the valence requirements of the other elements present, wherein $b + c \geq g$ and wherein the catalyst is substantially free of manganese, a noble metal and vanadium. The catalyst is useful in processes for the ammoxidn. of an olefin selected from the group consisting of propylene, isobutylene or mixts. thereof, to acrylonitrile, methacrylonitrile and mixts. thereof, resp. Thus, ferric nitrate nonahydrate 69.752, nickel nitrate hexahydrate 139.458, magnesium nitrate hexahydrate 49.186, bismuth nitrate pentahydrate 20.937, rubidium nitrate 2.122, and 50% cesium hexanitrate diammonium 94.654 g were melted at 70°, ammonium heptamolybdate 203.219, chromium trioxide 0.959, and 28.75% silica sol 871.08 g were mixed and combined with the metal nitrate melt, dried, denitrified at 290° for 3 h and 425° for 3 h, and calcined at 570° for 3 h to give a catalyst, propylene and the resulting catalyst were fed into a reactor (propylene/catalyst = 0.06/h) and reacted at 430° to give acrylonitrile, showing conversion 80.0% and selectivity to acrylonitrile 81.0.

REFERENCE COUNT: 35 THERE ARE 35 CITED REFERENCES AVAILABLE

10/717846

FOR THIS RECORD. ALL CITATIONS AVAILABLE
IN THE RE FORMAT

L68 ANSWER 3 OF 32 HCAPLUS COPYRIGHT 2007 ACS on STN DUPLICATE 3
ACCESSION NUMBER: 2003:931316 HCAPLUS Full-text
DOCUMENT NUMBER: 139:396288
TITLE: Ammoxidation of carboxylic acids into a
mixture of saturated and unsaturated nitriles
INVENTOR(S): Godbole, Sanjay P.; **Paparizos,**
Christos; Seely, Michael J.
PATENT ASSIGNEE(S): The Standard Oil Company, USA
SOURCE: PCT Int. Appl., 15 pp.
CODEN: PIXXD2
DOCUMENT TYPE: Patent
LANGUAGE: English
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
WO 2003097583	A1	20031127	WO 2003-US15983	2003 0516

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W: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA,
CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, ES, FI,
GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG,
KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK,
MN, MW, MX, MZ, NI, NO, NZ, OM, PH, PL, PT, RO, RU, SC,
SD, SE, SG, SK, SL, TJ, TM, TN, TR, TT, TZ, UA, UG, UZ,
VC, VN, YU, ZA, ZM, ZW
RW: GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZM, ZW, AM,
AZ, BY, KG, KZ, MD, RU, TJ, TM, AT, BE, BG, CH, CY, CZ,
DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IT, LU, MC, NL,
PT, RO, SE, SI, SK, TR, BF, BJ, CF, CG, CI, CM, GA, GN,
GQ, GW, ML, MR, NE, SN, TD, TG
US 2003219372 A1 20031127 US 2003-438586
2003
0515

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US 6982342	B2	20060103		
AU 2003233620	A1	20031202	AU 2003-233620	2003 0516

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EP 1503982	A1	20050209	EP 2003-729057	2003 0516
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R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE,
MC, PT, IE, SI, LT, LV, FI, RO, MK, CY, AL, TR, BG, CZ,
EE, HU, SK
BR 2003009879 A 20050301 BR 2003-9879
2003
0516

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JP 2005526135	T	20050902	JP 2004-505316	2003 0516
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CN 1701060	A	20051123	CN 2003-811150	2003 0516
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PRIORITY APPLN. INFO.: US 2002-381066P P
2002

0516

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WO 2003-US15983 W

2003
0516

AB A process for increasing the yield of acetonitrile produced during the manufacture of acrylonitrile, comprises introducing a hydrocarbon selected from propylene and propane, a carboxylic acid, ammonia, and an O2-containing gas into a reaction zone containing an ammoxidn. catalyst (e.g., BiFeMoOx), reacting the hydrocarbon, carboxylic acid, ammonia and oxygen over said catalyst at an elevated temperature to produce acrylonitrile, hydrogen cyanide and acetonitrile, and recovering the acrylonitrile, hydrogen cyanide and acetonitrile from the reactor.

REFERENCE COUNT: 8 THERE ARE 8 CITED REFERENCES AVAILABLE
FOR THIS RECORD. ALL CITATIONS AVAILABLE
IN THE RE FORMAT

L68 ANSWER 4 OF 32 HCAPLUS COPYRIGHT 2007 ACS on STN DUPLICATE 4

ACCESSION NUMBER: 2002:142588 HCAPLUS Full-text

DOCUMENT NUMBER: 136:184267

TITLE: Improved catalysts for the manufacture of acrylonitrile

INVENTOR(S): **Paparizos, Christos; Seely, Michael J.**; Friedrich, Maria Strada; Suresh, Dev D.

PATENT ASSIGNEE(S): The Standard Oil Company, USA

SOURCE: PCT Int. Appl., 11 pp.

CODEN: PIXXD2

DOCUMENT TYPE: Patent

LANGUAGE: English

FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
WO 2002013963	A2	20020221	WO 2001-US124253	2001 0802

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WO 2002013963 A3 20020502

W: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, TZ, UA, UG, UZ, VN, YU, ZA, ZW

RW: GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZW, AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, TR, BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG

US 6458742	B1	20021001	US 2000-641380	2000 0817
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CA 2417987	A1	20020221	CA 2001-2417987	2001 0802
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AU 200178136	A	20020225	AU 2001-78136	2001 0802
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EP 1309402	A2	20030514	EP 2001-956103	2001 0802
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R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE,
MC, PT, IE, SI, LT, LV, FI, RO, MK, CY, AL, TR
BR 2001013310 A 20030624 BR 2001-13310

2001
0802

JP 2004505766 T 20040226 JP 2002-519095

2001
0802

RU 2266784 C2 20051227 RU 2003-107043

2001
0802

US 2002198398 A1 20021226 US 2002-213755

2002
0806

US 6965046 B2 20051115
BG 107525 A 20031231 BG 2003-107525

2003
0205

ZA 2003001006 A 20040213 ZA 2003-1006

2003
0205

PRIORITY APPLN. INFO.:

US 2000-641380 A

2000
0817

WO 2001-US24253 W

2001
0802

AB A catalyst composition comprising a complex of catalytic oxides of iron, bismuth, molybdenum, cobalt, cerium, antimony, at least one of nickel or magnesium, and at least one of lithium, sodium, potassium, rubidium, or thallium, and characterized by the following empirical formula: $AaBbCcFedBieCofCegSbhMomOx$ wherein A is least one of Cr, P, Sn, Te, B, Ge, Zn, In, Mn, Ca, W, or mixts. thereof, B is ≥ 1 of Li, Na, K, Rb, Cs, Tl, or mixts. thereof, C is least one of Ni, Mg or mixts. thereof, $a = 0-4.0$, $b = 0.01-1.5$, $c = 1.0-10.0$, $d = 0.1-5.0$, $e = 0.1-2.0$, $f = 0.1-10.0$, $g = 0.1-2.0$, $h = 0.1-2.0$, $m = 12.0-18.0$, and $x =$ a number determined by the valence requirements of the other elements present. The catalyst is useful in processes for the ammoxidn. of an olefin selected from the group consisting of propylene, isobutylene or mixts. thereof, to acrylonitrile, methacrylonitrile and mixts. thereof, resp. Thus, 196.49 g ammonium heptamolybdate in 400 mL water, 625 g silica sol (40% SiO_2), and a 50% solution of Sb_2O_3 5.96, $Fe(NO_3)_3 \cdot 9H_2O$ 66.12, $Ni(NO_3)_2 \cdot 6H_2O$ 71.39, $Co(NO_3)_2 \cdot 6H_2O$ 83.36, $Mg(NO_3)_2 \cdot 6H_2O$ 41.96, $Bi(NO_3)_3 \cdot 5H_2O$ 19.85, KNO_3 1.66, and $Ce(NH_4)_2(NO_3)_6 \cdot 6H_2O$ 89.73 g were blended to give 479 g catalyst and heated at 290° for 3 h, at 425° for 3 h, and at 600° for 3 h to give a finished catalyst $K_0.2Ni_3.0Mg_2.0Fe_2.0Bi_0.5Co_3.5Ce_1.0Sb_0.5Mo_{13.6}O_x$ having conversion of propylene to all products 98.0% and conversion propylene to acrylonitrile 79.8%.

L68 ANSWER 5 OF 32 HCAPLUS COPYRIGHT 2007 ACS on STN DUPLICATE 5

ACCESSION NUMBER: 2001:195219 HCAPLUS Full-text

DOCUMENT NUMBER: 134:223141

TITLE: Ammoxidation process for increasing the yield of hydrogen cyanide and acetonitrile produced during the manufacture of acrylonitrile

INVENTOR(S): Godbole, Sanjay P.; Seely, Michael J.
; Suresh, Dev D.

PATENT ASSIGNEE(S): The Standard Oil Company, USA

SOURCE: U.S., 5 pp., Cont.-in-part of U.S. Ser. No. 208,053, abandoned.

10/717846

DOCUMENT TYPE: CODEN: USXXAM
LANGUAGE: Patent
FAMILY ACC. NUM. COUNT: 1 English
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
-----	----	-----	-----	-----
US 6204407	B1	20010320	US 2000-517404	2000 0302
			<--	
TW 565547	B	20031211	TW 2001-90106356	2001 0319
			<--	
PRIORITY APPLN. INFO.:			US 1998-208053	B2 1998 1209
			<--	
			US 2000-517404	A 2000 0302
			<--	

AB A process for increasing the yield of one or both co-products HCN and MeCN produced during the manufacture of acrylonitrile comprises introducing a hydrocarbon selected from propylene and propane, a mixture comprising one or more alcs. selected from crude methanol, crude ethanol or crude propanol, ammonia and air into a reaction zone containing an ammoxidn. catalyst, reacting the hydrocarbon, alc., ammonia and oxygen over said catalyst at an elevated temperature to produce acrylonitrile, hydrogen cyanide and acetonitrile, and recovering the acrylonitrile, hydrogen cyanide and acetonitrile from the reactor.

REFERENCE COUNT: 2 THERE ARE 2 CITED REFERENCES AVAILABLE
FOR THIS RECORD. ALL CITATIONS AVAILABLE
IN THE RE FORMAT

L68 ANSWER 6 OF 32 HCAPLUS COPYRIGHT 2007 ACS on STN DUPLICATE 6
ACCESSION NUMBER: 1999:147352 HCAPLUS Full-text
DOCUMENT NUMBER: 130:184450
TITLE: Regeneration of used molybdenum-based
catalysts by addition of ammonium dimolybdate
INVENTOR(S): Suresh, Dev Dhanaraj; **Paparizos,**
Christos; Seely, Michael J.;
Drenski, Tama Lee; Friedrich, Maria Strada
PATENT ASSIGNEE(S): The Standard Oil Company, USA
SOURCE: U.S., 3 pp.
CODEN: USXXAM
DOCUMENT TYPE: Patent
LANGUAGE: English
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
-----	----	-----	-----	-----
US 5877108	A	19990302	US 1997-988589	1997 1205
			<--	
ZA 9810494	A	19990524	ZA 1998-10494	1998 1117
			<--	
EP 922492	A1	19990616	EP 1998-309585	1998 1124

<--

R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE,
MC, PT, IE, SI, LT, LV, FI, RO

MX 9810186 A 20000131 MX 1998-10186

1998
1203

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CN 1226461 A 19990825 CN 1998-126363

1998
1204

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BR 9805660 A 20000411 BR 1998-5660

1998
1204

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JP 11235526 A 19990831 JP 1998-347464

1998
1207

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TW 412446 B 20001121 TW 1998-87120171

1999
0113

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PRIORITY APPLN. INFO.: US 1997-988589 A

1997
1205

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AB A process for regenerating molybdenum-containing ammoxidn. catalyst includes replacing the molybdenum loss from the catalyst during the ammoxidn. reaction wherein ammonium dimolybdenum is utilized as the source for replacement of the molybdenum loss from the original catalyst.

REFERENCE COUNT: 4 THERE ARE 4 CITED REFERENCES AVAILABLE
FOR THIS RECORD. ALL CITATIONS AVAILABLE
IN THE RE FORMAT

L68 ANSWER 7 OF 32 HCAPLUS COPYRIGHT 2007 ACS on STN DUPLICATE 7

ACCESSION NUMBER: 1998:774201 HCAPLUS Full-text

DOCUMENT NUMBER: 130:25443

TITLE: Catalyst for the manufacture of acrylonitrile
and hydrogen cyanide

INVENTOR(S): Suresh, Dev Dhanaraj; **Paparizos,**
Christos; Seely, Michael J.;
Friedrich, Maria Strada; Drenski, Tama Lee

PATENT ASSIGNEE(S): The Standard Oil Company, USA

SOURCE: U.S., 4 pp.
CODEN: USXXAM

DOCUMENT TYPE: Patent

LANGUAGE: English

FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
-----	----	-----	-----	
US 5840648	A	19981124	US 1997-923878	1997 0902
ZA 9807256	A	19990215	ZA 1998-7256	1998 0813
EP 900592	A1	19990310	EP 1998-306542	1998 0817

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R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE,

10/717846

MC, PT, IE; SI, LT, LV, FI, RO
EP 1321188 A1 20030625 EP 2003-75784

1998
0817

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R: DE, ES, GB, IT, NL
BR 9806573 A 20000509 BR 1998-6573

1998
0828

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RO 115333 B1 20000128 RO 1998-1345

1998
0831

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CN 1223903 A 19990728 CN 1998-117923

1998
0901

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CN 1131725 B 20031224
RU 2217232 C2 20031127 RU 1998-117081

1998
0901

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BG 64461 B1 20050331 BG 1998-102741

1998
0901

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JP 11169715 A 19990629 JP 1998-248798

1998
0902

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TW 470666 B 20020101 TW 1998-87114484

1998
1110

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IN 2005DE00922 A 20061201 IN 2005-DE922

2005
0412

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PRIORITY APPLN. INFO.: US 1997-923878 A

1997
0902

<--

EP 1998-306542 A3

1998
0817

<--

AB The title catalyst composition comprises a complex of catalytic oxides of iron, bismuth, molybdenum and calcium and characterized by the formula: AaBbCcDdFeeBifMO12Ox where A=one or more of Li, Na, K, Rb and Cs or mixts. thereof B=one or more of Mg, Mn, Ni, Co, Ag, Pb, Re, Cd and Zn or mixts. thereof C=one or more of Ce, Cr, Al, Sb, P, Ge, La, Sn, V and W or mixts. thereof D=one or more of Ca, Sr, Ba or mixts. thereof and a=0.01 to 1.0; b and e=1.0-10; c, d, and f=0.1 to 5.0 and x is a number determined by the valence requirements of the other elements present.

REFERENCE COUNT: 67 THERE ARE 67 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L68 ANSWER 8 OF 32 HCAPLUS COPYRIGHT 2007 ACS on STN DUPLICATE 8

ACCESSION NUMBER: 1998:668001 HCAPLUS Full-text

DOCUMENT NUMBER: 129:302946

TITLE: Method of improving the attrition resistance of vanadium/antimony oxide based catalyst

INVENTOR(S): Seely, Michael J.; Friedrich, Maria Strada; Suresh, Dev Dhanaraj; Kocjancic, Frank John

PATENT ASSIGNEE(S): The Standard Oil Co., USA

10/717846

SOURCE: U.S., 4 pp., Cont.-in-part of U.S. Ser. No.
574,055, abandoned.
CODEN: USXXAM

DOCUMENT TYPE: Patent
LANGUAGE: English
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
-----	----	-----	-----	
US 5821192	A	19981013	US 1996-717074	1996 0923

PRIORITY APPLN. INFO.: <--
US 1996-574055 B2
1996
1218

AB A process for preparing a catalyst VaSbbMcOx , wherein M = Sn, Ti, Li, Na, K, Mo, W, Fe, Cr, Co, Cu, Ga, Nb, Ta, Te, Bi, or mixts. thereof, a = 0.1-5, preferably 0.1-3, most preferably 0.1-2, b = 0.1-5, preferably 0.1-3, most preferably 0.1-2, c = 0.0-5, preferably >0 to 5, most preferably 0.01-3, and x is a number sufficient to satisfy the valency requirements of the elements, comprises forming an aqueous slurry comprising V and Sb, adding a peptizing agent (NH_3 , amines, etc.) free of any Li compds. capable of providing hydroxide ions to the slurry and spray drying the slurry to form an attrition resistant catalyst. Thus, a V1Sb1.5Sn0.2O5.15 catalyst was prepared and used in ammoxidn. reaction for manufacture of acrylonitrile.

REFERENCE COUNT: 1 THERE ARE 1 CITED REFERENCES AVAILABLE
FOR THIS RECORD. ALL CITATIONS AVAILABLE
IN THE RE FORMAT

L68 ANSWER 9 OF 32 HCAPLUS COPYRIGHT 2007 ACS on STN DUPLICATE 9

ACCESSION NUMBER: 1998:427812 HCAPLUS Full-text
DOCUMENT NUMBER: 129:109400
TITLE: Ammoxidation catalysts containing germanium to
produce high yields of **acrylonitrile**
INVENTOR(S): Drenski, Tama Lee; Friedrich, Maria Strada;
Paparizos, Christos; Seely,
Michael J.; Suresh, Dev Dhanaraj
PATENT ASSIGNEE(S): **Standard Oil Co., USA**
SOURCE: U.S., 4 pp., Cont.-in-part of U.S. Ser. No.
461,996, abandoned.
CODEN: USXXAM
DOCUMENT TYPE: Patent
LANGUAGE: English
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
-----	----	-----	-----	
US 5770757	A	19980623	US 1996-646742	1996 0503

PRIORITY APPLN. INFO.: <--
US 1995-461996 B2
1995
0605

AB The catalyst has the atomic ratios set forth in the empirical formula:
 $\text{AaBbCcGedBieMol2Ox}$ (A = ≥ 2 of alkali metals, In, Tl; B = Mg, Mn, Ni, Co, Ca, Fe, Ce, Sm, Cr, Sb, W, preferably B equals the combination of Fe and ≥ 1 element selected from the group consisting of Ni and Co and ≥ 1 element selected from the group consisting of Mg, Mn, Ca, Ce, Sn, Cr, Sb, and W; C = Pb, Eu, B, Sn, Te, Cu; a = 0.05-5.0; b = 5-12; c = 0-5.0; d = 0.1-2.0; e = 0.1-2.0; x = the number of oxygen atoms required to satisfy

the valency requirements of the other elements; $b > a + c$). Thus, ammoxidn. of propylene using a silica-supported catalyst containing $\text{Cs0.1K0.1Ni6.2Mg2.5Fe2Bi0.5Ce0.5Mo13.6Ge0.5Ox}$ gave 84.4% **acrylonitrile**.

REFERENCE COUNT: 12 THERE ARE 12 CITED REFERENCES AVAILABLE
FOR THIS RECORD. ALL CITATIONS AVAILABLE
IN THE RE FORMAT

L68 ANSWER 10 OF 32 HCAPLUS COPYRIGHT 2007 ACS on STN DUPLICATE 10
ACCESSION NUMBER: 1997:752727 HCAPLUS Full-text
DOCUMENT NUMBER: 128:24259
TITLE: Ammoxidation catalysts containing germanium to
produce high yields of **acrylonitrile**
INVENTOR(S): Drenski, Tama Lee; Friedrich, Maria Strada;
Paparizos, Christos; Seely, Michael J.; Suresh, Dev Dhanaraj
PATENT ASSIGNEE(S): **Standard Oil Co., USA**
SOURCE: U.S., 4 pp., Cont.-in-part of U.S. Ser. No.
432,329.
CODEN: USXXAM
DOCUMENT TYPE: Patent
LANGUAGE: English
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
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US 5688739	A	19971118	US 1996-642707	1996 0503

PRIORITY APPLN. INFO.: <--
US 1995-432329 A2
1995
0501

AB The catalyst has the atomic ratios set forth in the empirical formula $\text{AaBbCcGedBieMol2Ox}$, where $A = \geq 2$ alkali metals, In, and Tl; $B =$ the combination of Fe plus Ni and/or Co plus ≥ 1 element of Mg, Mn, etc.; $C = \geq 1$ Pb, Eu, B, Sn, Te, and Cu; $a = 0.05-5.0$; $b = 5-12$; $c = 0-5.0$; $d = 0.1-2.0$; $e = 0.1-2.0$; $x =$ number of O atoms; and $b > a + c$. A catalyst $\text{Ge0.5Li0.5Cs0.1K0.1Ni6.2Mg2.5Fe2Bi0.75Ce0.5Mo13.6Ox}$ was prepared and used for ammoxidn. of propylene to give 82.5% **acrylonitrile**.

L68 ANSWER 11 OF 32 HCAPLUS COPYRIGHT 2007 ACS on STN DUPLICATE 11
ACCESSION NUMBER: 1994:167283 HCAPLUS Full-text
DOCUMENT NUMBER: 120:167283
TITLE: Catalysts for ammoxidation of olefins
INVENTOR(S): Suresh, Dev D.; **Seely, Michael J.**;
Friedrich, Maria S.; **Paparizos, Christos**
PATENT ASSIGNEE(S): **Standard Oil Co., USA**
SOURCE: U.S., 11 pp.
CODEN: USXXAM
DOCUMENT TYPE: Patent
LANGUAGE: English
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
----- -----	----	-----	-----	
US 5258543	A	19931102	US 1992-904611	1992 0626

JP 07082228 A 19950328 JP 1993-216786

US 5093299	A	19920303	US 1990-462202	<--	1990 0109
ES 2057448	T3	19941016	ES 1990-313574	<--	1990 1213
IN 179782	A1	19971206	IN 1990-DE1260	<--	1990 1214
BR 9006650	A	19911001	BR 1990-6650	<--	1990 1228
RO 109511	B1	19950330	RO 1991-146695	<--	1991 0107
CN 1053197	A	19910724	CN 1991-100078	<--	1991 0108
CN 1026758 RU 2038146	B C1	19941130 19950627	RU 1991-4894302	<--	1991 0108
JP 07047271	A	19950221	JP 1991-1034	<--	1991 0109
JP 3337696 KR 184871	B2 B1	20021021 19990415	KR 1991-182	<--	1991 0109
US 5175334	A	19921229	US 1991-806959	<--	1991 1212
PRIORITY APPLN. INFO.:			US 1990-462202	<--	A2 1990 0109
<--					
AB	<p>The title compds. are prepared by ammoxidn. of C₃H₆ or isobutylene with O-containing gas and NH₃ at 260-600° using metal oxide catalysts AaKbCscMgdNieFefBigMol2Ox (A = Co, Mn, Cr, P, Sb, Te, Na, Ce, W; a = 0-5; b = 0-0.4; c = 0-0.4; b + c = 0.1-0.4; d, e, f, g = 0.2-10; x is determined by valency requirement). Thus, ammoxidn. of C₃H₆ (in 1.8:2.2:3.6:2.4:6 mol ratio of C₃H₆-NH₃-O-N₂-H₂O mixture) in a fixed bed reactor containing Cs0.05K0.06Ni5.5Mg2.5Fe2.0Bi1.0P0.1Mo12.0Ox on SiO₂ catalyst at 430° and 6.0 s residence time gave 78.5% acrylonitrile (I) with C₃H₆ conversion 99.0% and I selectivity 79.3%.</p>				
L68 ANSWER 13 OF 32 HCAPLUS COPYRIGHT 2007 ACS on STN DUPLICATE 13					
ACCESSION NUMBER:	1993:411574 HCAPLUS <u>Full-text</u>				
DOCUMENT NUMBER:	119:11574				
TITLE:	Manufacture of hydrogen cyanide by catalytic ammoxidation of crude acetonitrile				
INVENTOR(S):	Suresh, Dev D.; Cesa, Mark C.; Yang, Tai C.; Grasselli, Robert K.; Bruce, Mark R.; Seely, Michael J.; Friedrich, Maria S.; Dubbert, Robert A.				
PATENT ASSIGNEE(S):	Standard Oil Co., USA				

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SOURCE: U.S., 7 pp.
 CODEN: USXXAM
 DOCUMENT TYPE: Patent
 LANGUAGE: English
 FAMILY ACC. NUM. COUNT: 1
 PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
-----	----	-----	-----	
US 5204079	A	19930420	US 1991-656543	1991 0215

PRIORITY APPLN. INFO.: <--
 US 1991-656543
 1991
 0215

AB HCN is prepared from HCN-containing CH₃CN(1) by contacting the crude CH₃CN with an ammoxidn. catalyst at elevated temperature in the presence of an O-containing gas and NH₃. Preferably, the process is performed in the absence of C₃H₆.

L68 ANSWER 14 OF 32 HCAPLUS COPYRIGHT 2007 ACS on STN DUPLICATE 14

ACCESSION NUMBER: 1992:579231 HCAPLUS Full-text
 DOCUMENT NUMBER: 117:179231
 TITLE: Catalyst for propylene ammoxidation to acrylonitrile
 INVENTOR(S): Paparizos, Christos; Shaw, Wilfrid G.
 PATENT ASSIGNEE(S): Standard Oil Co., USA
 SOURCE: U.S., 5 pp.
 CODEN: USXXAM
 DOCUMENT TYPE: Patent
 LANGUAGE: English
 FAMILY ACC. NUM. COUNT: 2
 PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
-----	----	-----	-----	
US 5134105	A	19920728	US 1990-495875	1990 0319
US 5235088	A	19930810	US 1992-881581	1992 0512
RO 111162	B1	19960730	RO 1992-775	1992 0609
EP 573713	A1	19931215	EP 1992-305436	1992 0612
EP 573713	B1	19970102		
R: AT, DE, ES, GB, IT, NL				
CN 1080284	A	19940105	CN 1992-105674	1992 0619
CN 1034863	B	19970514		
BR 9202497	A	19940118	BR 1992-2497	1992 0707

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CN 1141216

A

19970129

CN 1996-101529

1996
0115

CN 1071593

B

20010926

PRIORITY APPLN. INFO.:

US 1990-495875

A3

1990
0309

AB Olefins, such as propylene and isobutylene, are converted to the corresponding unsatd. nitriles, **acrylonitrile**, and methacrylonitrile, resp., by reacting a mixture of the olefin, NH₃ and mol. O-containing gas in the presence of a catalyst containing the oxides of Mo, Bi, Fe, Co, Ni, and Cr and either P or Sb or mixts. thereof, and an alkali metal or mixture thereof, and optionally 1 element selected from the group of an alkaline earth metal, a rare earth metal, Nb, Tl, As, Mg, Zn, Cd, V, B, Ca, Sn, Ge, Mn, W, Te, or mixts. thereof.

L68 ANSWER 15 OF 32 HCAPLUS COPYRIGHT 2007 ACS on STN DUPLICATE 15

ACCESSION NUMBER: 1991:608830 HCAPLUS Full-text

DOCUMENT NUMBER: 115:208830

TITLE: Process for the manufacture of **acrylonitrile** and methacrylonitrileINVENTOR(S): Friedrich, Maria S.; **Seely, Michael J.**
; Suresh, Dev D.PATENT ASSIGNEE(S): **Standard Oil Co., USA**

SOURCE: Eur. Pat. Appl., 10 pp.

CODEN: EPXXDW

DOCUMENT TYPE: Patent

LANGUAGE: English

FAMILY ACC. NUM. COUNT: 2

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
EP 437056	A2	19910717	EP 1990-313574	1990 1213
EP 437056	A3	19910918		
EP 437056	B1	19940810		
EP 437056	B2	19980415		
R: AT, DE, ES, GB, IT, NL				
US 5093299	A	19920303	US 1990-462202	1990 0109
ES 2057448	T3	19941016	ES 1990-313574	1990 1213
IN 179782	A1	19971206	IN 1990-DE1260	1990 1214
BR 9006650	A	19911001	BR 1990-6650	1990 1228
RO 109511	B1	19950330	RO 1991-146695	1991 0107
CN 1053197	A	19910724	CN 1991-100078	1991

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 CN 1026758 B 19941130
 RU 2038146 C1 19950627 RU 1991-4894302

1991
 0108

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 JP 07047271 A 19950221 JP 1991-1034

1991
 0109

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 JP 3337696 B2 20021021
 KR 184871 B1 19990415 KR 1991-182

1991
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 US 5175334 A 19921229 US 1991-806959

1991
 1212

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 PRIORITY APPLN. INFO.: US 1990-462202 A

1990
 0109

<--
 AB (Meth)acrylonitrile is prepared by ammoxidn. of C₃H₆ or isobutylene with O-containing gas and NH₃ at 260-600° using oxide catalysts AaKbCscMgdNieFefBigMO12Ox (A = Co, Mn, Cr, P, Sb, Te, Na, Ce, and/or W; a = 0-5; b = 0-0.4; c = 0-0.4; b+c = 0.1-0.4; d, e, f = 0.2-10; x is based on valency requirements). Thus, ammoxidn. of C₃H₆ (in 1.8:2.2:36:2.4:6 C₃H₆-NH₃-O-N₂-H₂O mixture) in a fixed bed reactor containing K_{0.04}Cs_{0.03}Ni₃Mg₂Fe_{1.8}Mn_{0.45}Bi_{0.45}Cr_{0.45}Mo₁₂O_x on SiO₂ catalyst at 430° and 6.0 s residence time gave C₃H₆ conversion 100% and acrylonitrile selectivity 78.6%.

L68 ANSWER 16 OF 32 HCAPLUS COPYRIGHT 2007 ACS on STN DUPLICATE 16

ACCESSION NUMBER: 1991:229592 HCAPLUS Full-text

DOCUMENT NUMBER: 114:229592

TITLE: Process and catalysts for ammoxidation of paraffins in monomeric unsaturated nitrile manufacture

INVENTOR(S): Seely, Michael J.; Friedrich, Maria S.; Suresh, Dev D.

PATENT ASSIGNEE(S): Standard Oil Co., USA

SOURCE: U.S., 5 pp.
 CODEN: USXXAM

DOCUMENT TYPE: Patent

LANGUAGE: English

FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
US 4978764	A	19901218	US 1989-411989	1989 0925
EP 420455	A2	19910403	EP 1990-310039	1990 0913
EP 420455	A3	19911023		
EP 420455	B1	19950322		
R: DE, IT, NL				
JP 03157356	A	19910705	JP 1990-254001	1990 0921

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1993
0901

JP 2845728 B2 19990113
ZA 9306480 A 19940325 ZA 1993-6480

1993
0902

RU 2105757 C1 19980227 RU 1993-50369

1993
0902

RO 111163 B1 19960730 RO 1993-1191

1993
0903

CN 1100091 A 19950315 CN 1993-116832

1993
0906

CN 1036581 B 19971203
BR 9303736 A 19950502 BR 1993-3736

1993
0908

KR 138499 B1 19980501 KR 1993-18122

1993
0909

PRIORITY APPLN. INFO.: US 1992-904611

1992
0626

AB The title catalysts showing improved activity and selectivity have the empirical formula VSb_aMmNnO_x (a = 0.5-2; M = ≥1 of Sn, Ti, Fe, Ga; m = 0.05-3; N = ≥1 of W, Bi, MO, Li, etc.; n = 0.05-0.5) and are prepared by contacting in an aqueous solution a V compound and an Sb compound while the V compound is in solution. Stirring 11.42 g V2O5, 450 mL H2O, and 50 g 30% H2O2 for 15 min, heating 21.85 g Sb2O3 with the mixture, digesting for 3 h, adding 4.99 g fumed TiO2, 33.33 g 30% SiO2 sol, and a proper amount of CrO3, grinding and calcining gave a catalyst with empirical formula VSb_{1.2}Cr_{0.2}Ti_{0.5}O_x. A feed containing 1.8/2.2/3.6/2.4/6 mol ratio C3H6/NH3/O2/N2/H2O was contacted with the catalyst at 460° for 0.17 s giving 67.8 mol% **acrylonitrile** at 96.8% C3H6 conversion and 70.1% selectivity.

L68 ANSWER 12 OF 32 HCAPLUS COPYRIGHT 2007 ACS on STN DUPLICATE 12

ACCESSION NUMBER: 1994:55269 HCAPLUS Full-text

DOCUMENT NUMBER: 120:55269

TITLE: Catalysts for the manufacture of **acrylonitrile** and methacrylonitrile
INVENTOR(S): Suresh, Dev D.; Friedrich, Maria S.; **Seely, Michael J.**

PATENT ASSIGNEE(S): **Standard Oil Co., USA**

SOURCE: U.S., 5 pp. Cont.-in-part of U.S. 5,093,299.

CODEN: USXXAM

DOCUMENT TYPE: Patent

LANGUAGE: English

FAMILY ACC. NUM. COUNT: 2

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
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US 5212137	A	19930518	US 1991-736864	

1991
0729

10/717846

JP 2877477 B2 19990331
KR 156578 B1 19981201 KR 1990-15133

1990
0924

PRIORITY APPLN. INFO.: <--
US 1989-411989 A

1989
0925

AB α,β -Unsatd. mononitriles are prepared by catalytic ammoxidn. of C³-5 paraffins with a catalyst composition containing 10-90% diluent/support, and 10-90% metal oxides having the formula AaDdBicFefMo12Ox (A = Li, Na, K, Rb, Cs, Tl, B, W, Sn, La; D = Cr, Sb, Pb, P, Cu, Ni, Co, Mn, Mg; a = 0-10; c = 0.1-10; d = 0-10; f = 0.2-10). Thus, a 5:1:2:1 C₃H₈-NH₃-O-H₂O mixture was heated with a catalyst composition containing 33% Al₂O₃ and 67% Cs_{0.05}K_{0.1}Ni_{2.5}Co_{4.5}Fe₂MnBiCr_{0.5}Mo_{13.2}Ox at 470° for 1.1 s to give **acrylonitrile** in 58.3% selectivity with 10% C₃H₈ conversion.

L68 ANSWER 17 OF 32 HCAPLUS COPYRIGHT 2007 ACS on STN DUPLICATE 17
ACCESSION NUMBER: 1990:36713 HCAPLUS Full-text
DOCUMENT NUMBER: 112:36713
TITLE: Ammoxidation catalyst performance improvement via separate boron addition and process for nitrile manufacture from olefins
INVENTOR(S): Suresh, Dev D.; Seely, Michael J.; Brazdil, James F.; Grasselli, Robert K.
PATENT ASSIGNEE(S): Standard Oil Co., USA
SOURCE: U.S., 5 pp.
CODEN: USXXAM
DOCUMENT TYPE: Patent
LANGUAGE: English
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
US 4855275	A	19890808	US 1988-157428	1988 0218

PRIORITY APPLN. INFO.: <--
US 1988-157428
1988
0218

AB Ammoxidn. catalysts which are contacted with a heat-decomposable B compound (so as to deposit B on the surface of the catalyst) have increased catalyst activity and nitrile selectivity. Thus, a molybdate-based ammoxidn. catalyst was heated with 2% MoO₃ and 1% H₃BO₃, then contacted at 445° with a feed containing propylene (I), O, N, NH₃, and H₂O, producing **acrylonitrile** in 82.0% yield and 85.1% selectivity with 96.4% I conversion, vs, 79.0, 79.4, and 99.6, resp., for an untreated control catalyst.

L68 ANSWER 18 OF 32 HCAPLUS COPYRIGHT 2007 ACS on STN DUPLICATE 18
ACCESSION NUMBER: 1987:428927 HCAPLUS Full-text
DOCUMENT NUMBER: 107:28927
TITLE: Method of preparation of highly active-phase (amm)oxidation catalysts with improved performance and attrition resistance
INVENTOR(S): Suresh, Dev D.; Zagata, Robert J.; Friedrich, Maria S.; Seely, Michael J.
PATENT ASSIGNEE(S): Standard Oil Co., USA
SOURCE: U.S., 5 pp.
CODEN: USXXAM
DOCUMENT TYPE: Patent
LANGUAGE: English

FAMILY ACC. NUM. COUNT: 4

PATENT INFORMATION:

PATENT NO. -----	KIND ----	DATE -----	APPLICATION NO. -----	DATE
US 4659689	A	19870421	US 1986-836269	1986 0305
US 5059621	A	19911022	<-- US 1989-430286	1989 1102
US 5288744	A	19940222	<-- US 1992-900479	1992 0618
PRIORITY APPLN. INFO.:			<-- LU 1984-85544	A 1984 0919
			<-- US 1985-777728	B2 1985 0919
			<-- US 1986-836269	A3 1986 0313
			<-- US 1986-839269	A3 1986 0313
			<-- US 1988-172494	A3 1988 0324
			<-- US 1989-430286	A3 1989 1102
			<-- US 1991-696708	A3 1991 0507

AB A process for the preparation of a Bi molybdate-based catalyst (e.g., 80% K_{0.1}Ni_{2.5}Co_{4.5}Fe₂CrBiW_{0.5}Mo₁₂O_x-20% SiO₂), useful for ammoxidn. of propylene and butylene, comprises (1) adding a dried mixture of metal salts of the active phase of the catalyst to an aqueous sol containing a support material for the active phase; (2) adding an acid to this slurry; (3) heating the slurry to dryness; and (4) calcining the dried precursor to form the catalyst.

L68 ANSWER 19 OF 32 HCAPLUS COPYRIGHT 2007 ACS on STN DUPLICATE 19

ACCESSION NUMBER: 1982:581770 HCAPLUS Full-text

DOCUMENT NUMBER: 97:181770

TITLE: Increasing the activity of a catalytic material

INVENTOR(S): Grasselli, Robert; Seely, Michael J.
; Suresh, Dev; Bigler, Leroy K.

PATENT ASSIGNEE(S): Standard Oil Co., USA

SOURCE: Ger. (East), 33 pp.

CODEN: GEXXA8

DOCUMENT TYPE: Patent

LANGUAGE: German

FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
DD 153761	A5	19820203	DD 1980-224816	1980 1029

PRIORITY APPLN. INFO.:

<--
US 1979-88889 A 1979
1029

<--
US 1979-90826 A 1979
1030

AB The activity of complex oxide catalysts was improved by heating them, first in a non-oxidizing gas, then in an oxidizing gas. Thus 50% K_{0.1}Cs_{0.05}Ni_{2.5}Fe₂Bi₁Mn₁Cr_{0.5}Mol_{3.2}O₂-50% SiO₂ were heated overnight in an oven at 120°, then heated in air 3 h at 290° and 3 h at 425° to give a catalyst for preparation of acrylonitrile by reaction of propylene with NH₃.

L68 ANSWER 20 OF 32 HCAPLUS COPYRIGHT 2007 ACS on STN

ACCESSION NUMBER: 2002:695936 HCAPLUS Full-text

DOCUMENT NUMBER: 137:218729

TITLE: Ammoxidation of a mixture of alcohols into a mixture of nitriles to acetonitrile and hydrogen cyanide during the manufacture of acrylonitrile

INVENTOR(S): Godbole, Sanjay P.; Seely, Michael J.
; Suresh, Dev D.

PATENT ASSIGNEE(S): The Standard Oil Company, USA

SOURCE: PCT Int. Appl., 14 pp.

CODEN: PIXXD2

DOCUMENT TYPE: Patent

LANGUAGE: English

FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
WO 2002070465	A1	20020912	WO 2001-US6881	2001 0305

<--

W: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, TZ, UA, UG, UZ, VN, YU, ZA, ZW

RW: GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZW, AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, TR, BF, BJ, CF, CG, CI, CM, GA, GN, GW, ML, MR, NE, SN, TD, TG

EP 1366019	A1	20031203	EP 2001-913286	2001 0305
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R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, SI, LT, LV, FI, RO, MK, CY, AL, TR

BR 2001016920	A	20040427	BR 2001-16920	2001 0305
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JP 2004525913 T 20040826 JP 2002-569786
2001
0305

RU 2264385	C2	20051120	RU 2003-127737	<--
				2001
				0305

PRIORITY APPLN. INFO.: WO 2001-US6881 W 2001 0305

REFERENCE COUNT: 3 THERE ARE 3 CITED REFERENCES AVAILABLE
FOR THIS RECORD. ALL CITATIONS AVAILABLE
IN THE RE FORMAT

L68 ANSWER 21 OF 32 HCAPLUS COPYRIGHT 2007 ACS on STN
ACCESSION NUMBER: 1997:591039 HCAPLUS Full-text
DOCUMENT NUMBER: 127:176195
TITLE: Ammoxidation method and catalysts for
production of unsaturated nitriles from
alkenes
INVENTOR(S): **Paparizos, Christos**; Uajlfrid,
Garsajd Sho; Shaw, Wilfrid G.
PATENT ASSIGNEE(S): Dze Standart Ojl Kompani, USA
SOURCE: Russ. From: Izobreteniya 1997, (11), 149.
CODEN: RUXXE7
DOCUMENT TYPE: Patent
LANGUAGE: Russian
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
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RU 2077528	C1	19970420	RU 1992-5052029	1992 0622

PRIORITY APPLN. INFO.: . SU 1992-5052029 A

1992
0622

L68 ANSWER 22 OF 32 HCAPLUS COPYRIGHT 2007 ACS on STN
ACCESSION NUMBER: 1995:769767 · HCAPLUS Full-text
DOCUMENT NUMBER: 123:173479
TITLE: Catalysts for gas-phase ammoxidation of
olefins
INVENTOR(S): Friedrich, Maria S.; Seeley, Michael J.;
Paparizos, Christos; Suresh, Dev D.
PATENT ASSIGNEE(S): **Standard Oil Co., USA**

10/717846

SOURCE: Eur. Pat. Appl., 17 pp.
CODEN: EPXXDW
DOCUMENT TYPE: Patent
LANGUAGE: English
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
EP 641771	A1	19950308	EP 1993-307073	1993 0908
<--				
EP 641771	B1	19981202		
R: AT, DE, ES, GB, IT, NL				
AT 174024	T	19981215	AT 1993-307073	1993 0908
<--				
ES 2125954	T3	19990316	ES 1993-307073	1993 0908

PRIORITY APPLN. INFO.: EP 1993-307073 A
1993
0908

AB Ammoxidn. of C3-5 mono-olefins to α,β -mono-unsatd. acyclic nitriles and HCN includes introducing such mono-olefins, mol. oxygen and ammonia into a reaction zone into vapor phase contact with a solid ammoxidn. catalyst, wherein the mol ratio of introduced mol. oxygen and ammonia to the introduced mono-olefin is at least 1.5 and 1.0, resp.; wherein the catalyst contains the elements and proportions indicated by the empirical formula $VlSbaMmNnOx$ where $a = 0.5-2$; $M = \geq 1$ Sn, Ti, Fe, and Ga; $m = 0.05-3$; $N = \geq 1$ W, Bi, Mo, Li, Mg, P, Zn, Mn, Te, Ge, Nb, Zr, Cr, Al, Cu, Ce, B; $n = 0.0-0.5$; and wherein the preparation of the catalyst includes contacting in an aqueous dispersion a vanadium compound and an antimony compound while the vanadium is in solution

L68 ANSWER 23 OF 32 HCAPLUS COPYRIGHT 2007 ACS on STN

ACCESSION NUMBER: 1995:748604 HCAPLUS Full-text

DOCUMENT NUMBER: 123:113054

TITLE: A process for reduction of wastes during manufacture of **acrylonitrile**

INVENTOR(S): Bigler, Kenneth L.; Bott, Paul E.; Friedrich, Maria S.; Keckler, Kenneth P.; Kocjancic, Frank J.; Miko, Steve J.; Reiling, Vincent G.; Rowe, Steven J.; Seely, Michael J.; et al.

PATENT ASSIGNEE(S): Standard oil Co., USA

SOURCE: Eur. Pat. Appl., 10 pp.

CODEN: EPXXDW

DOCUMENT TYPE: Patent

LANGUAGE: English

FAMILY ACC. NUM. COUNT: 3

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
EP 638546	A1	19950215	EP 1994-300858	1994 0204
<--				
EP 638546	B1	19981118		
R: DE, ES, GB, IT, NL				

10/717846

US 5457223

A

19951010

US 1993-104752

1993

0811

PRIORITY APPLN. INFO.:

<--

US 1993-104752

A

1993

0811

<--

US 1992-959237

A2

1992

1009

<--

AB For substantial reduction or complete elimination of (NH₄)₂SO₄ generated during **acrylonitrile** production by direct ammoxidn. of propylene/propane with NH₃ and an O-containing gas (e.g., air) over a fluidized-bed catalyst, MeOH is fed to the reactor in the upper portion at a location where it reacts with a portion if not all of the excess NH₃ without affecting the **acrylonitrile** yield. Preferably, MeOH is introduced into the reactor at below its coking temperature. When an O-lean fluidized-bed catalyst is used, an addnl. O-containing gas is introduced into the reaction at a distance 8-14 in. from the MeOH feed location.

L68 ANSWER 24 OF 32 HCAPLUS COPYRIGHT 2007 ACS on STN

ACCESSION NUMBER: 1994:458200 HCAPLUS Full-text

DOCUMENT NUMBER: 121:58200

TITLE: Ammoxidation of olefins

INVENTOR(S): **Paparizos, Christos;** Shaw, Wilfrid
GarsidePATENT ASSIGNEE(S): **Standard Oil Co., USA**

SOURCE: Eur. Pat. Appl., 10 pp.

CODEN: EPXXDW

DOCUMENT TYPE: Patent

LANGUAGE: English

FAMILY ACC. NUM. COUNT: 2

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
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EP 573713

A1

19931215

EP 1992-305436

1992

0612

<--

EP 573713

B1

19970102

R: AT, DE, ES, GB, IT, NL

US 5134105

A

19920728

US 1990-495875

1990

0319

<--

AT 147070

T

19970115

AT 1992-305436

1992

0612

<--

ES 2095406

T3

19970216

ES 1992-305436

1992

0612

<--

PRIORITY APPLN. INFO.:

US 1990-495875

1990

0319

<--

EP 1992-305436

A

1992

0612

<--

AB Olefins such as propylene and isobutylene are converted to the corresponding unsatd. nitriles, **acrylonitrile**, and methacrylonitrile, resp., by reacting a mixture of the

10/717846

olefin, ammonia, and mol. oxygen-containing gas in the presence of a catalyst containing the oxides of molybdenum, bismuth, iron, cobalt, nickel, and chromium, and either phosphorus or antimony or mixts. thereof, and an alkali metal or mixture thereof, and optionally one element selected from the group of an alkaline earth metal, a rare earth metal, niobium, thallium, arsenic, magnesium, zinc, cadmium, vanadium, boron, calcium, tin, germanium, manganese, tungsten, tellurium, or mixts. thereof.

L68 ANSWER 25 OF 32 WPIX COPYRIGHT 2007 THE THOMSON CORP on STN
 ACCESSION NUMBER: 2002-705617 [76] WPIX
 DOC. NO. CPI: C2002-200136 [76]
 TITLE: Preparation of supported **catalyst** for
catalytic vapor phase ammoxidation of
 propylene or isobutylene to form (meth)
acrylonitrile comprises forming and
 mixing **catalyst** precursor with aqueous
 sol, drying obtained slurry, and calcining
 DERWENT CLASS: A41; E16; J04
 INVENTOR: FRIEDRICH M S; **SEELY M J**; SURESH D D
 PATENT ASSIGNEE: (STAH-C) STANDARD OIL CO OHIO
 COUNTRY COUNT: 1

PATENT INFO ABBR.:

PATENT NO	KIND	DATE	WEEK	LA	PG	MAIN IPC
US 6451730	B1	20020917	(200276)*	EN	6[0]	

<--						

APPLICATION DETAILS:

PATENT NO	KIND	APPLICATION	DATE
US 6451730 B1		US 1997-883716	
19970627			

PRIORITY APPLN. INFO: US 1997-883716 19970627

AB US 6451730 B1 UPAB: 20050527

NOVELTY - A supported **catalyst** is prepared by mixing a vanadium compound, at least a portion of an antimony compound, and at least a portion of a support material to form a slurry, heating the slurry, and calcining to form a **catalyst** precursor; mixing the **catalyst** precursor with an aqueous sol to form a second slurry; drying the second slurry; and calcining the dried mixture at least 150 degrees C.

DETAILED DESCRIPTION - Preparation of a supported **catalyst** comprising the elements and proportions indicated by the empirical formula, $V1Sb_aM_bO_x$, involves mixing the vanadium compound, at least a portion of the antimony (Sb) compound, and at least a portion of the M compound and an aqueous sol containing a portion of the support material to form an aqueous slurry, heating the slurry to remove the water, and calcining at at least 150 degrees C to form a **catalyst** precursor; mixing the **catalyst** precursor with an aqueous sol containing the remaining portion of the support for the **catalyst** and any remaining portion of the Sb compound and M compound to form a second slurry; drying the second slurry to remove the water to form a dry mixture; and calcining the dried mixture at at least 150 degrees C to form the finished **catalyst**.

USE - Used for the preparation of a supported **catalyst** which is useful in **catalytic** vapor phase ammoxidation of propylene, propane, or isobutylene to produce (meth)**acrylonitrile**.

ADVANTAGE - The **catalyst** prepared by the inventive process exhibits outstanding characteristics as propylene ammoxidation **catalysts** with **acrylonitrile**, yielding similar to those obtained with present day commercial antimonate **catalysts**. It has potential as high throughput **catalysts** which give low levels of waste organics during use. The process allows for easier preparation of the **catalyst**, and increases the hardness of the **catalyst**, resulting in additional or improved attrition resistance when used in the fluid bed reactor.

L68 ANSWER 26 OF 32 WPIX COPYRIGHT 2007 THE THOMSON CORP on STN
 ACCESSION NUMBER: 2001-158999 [16] WPIX

10/717846

DOC. NO. CPI: C2001-047115 [16]
 TITLE: Ammoxidation of a mixture of ketones to
acetonitrile and hydrogen cyanide which
 produces increased yields of these co-products
 DERWENT CLASS: A41; E16; E35; H04
 INVENTOR: GODBOLE P; GODBOLE S P; SEELEY M J; SEELY J;
SEELY M; SEELY M J; SURESH D;
 SURESH D D; DHANARAJ S D; PURUSHOTTAM G S
 PATENT ASSIGNEE: (GODB-I) GODBOLE S P; (INNO-N) INNOVENE USA LLC;
 (MOBI-C) MOBIL OIL CORP; (SEEL-I) SEELY M J;
 (STAH-C) STANDARD OIL CO OHIO; (SURE-I) SURESH D
 D
 COUNTRY COUNT: 91

PATENT INFO ABBR.:

PATENT NO	KIND	DATE	WEEK	LA	PG	MAIN IPC
WO 2000073261	A1	20001207	(200116)*	EN	19[0]	
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AU 2000051359	A	20001218	(200118)	EN		
<--						
US 20020004027	A1	20020110	(200208)	EN		
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BR 2000010997	A	20020219	(200222)	PT		
<--						
EP 1181268	A1	20020227	(200222)	EN		
<--						
KR 2002003572	A	20020112	(200247)	KO		
<--						
US 6413485	B2	20020702	(200248)	EN		
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CN 1351586	A	20020529	(200258)	ZH		
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JP 2003500468	W	20030107	(200314)	JA	17	
ZA 2001009165	A	20030430	(200334)	EN	54	
US 20030198586	A1	20031023	(200370)	EN		
US 6667020	B2	20031223	(200408)	EN		
EP 1520852	A2	20050406	(200523)	EN		
CN 1629072	A	20050622	(200563)	ZH		
EP 1181268	B1	20051012	(200568)	EN		
EP 1181268	B8	20051214	(200602)	EN		
DE 60023134	E	20060223	(200617)	DE		
DE 60023134	T2	20060413	(200626)	DE		
ES 2249271	T3	20060401	(200627)	ES		
CN 1243726	C	20060301	(200660)	ZH		
RO 120909	B1	20060929	(200673)	RO		
CN 1267347	C	20060802	(200703)	ZH		

APPLICATION DETAILS:

PATENT NO	KIND	APPLICATION	DATE
WO 2000073261	A1	WO 2000-US13374	
20000516			
US 20020004027	A1	US 1999-320937	
19990527			
US 6413485	B2	US 1999-320937	
19990527			
US 20030198586	A1 Cont of	US 1999-320937	

19990527	
US 6667020 B2 Cont of	US 1999-320937
19990527	
EP 1520852 A2 Div Ex	EP 2000-935980
19990527	
AU 2000051359 A	AU 2000-51359
20000516	
BR 2000010997 A	BR 2000-10997
20000516	
CN 1351586 A	CN 2000-807997
20000516	
CN 1629072 A Div Ex	CN 2000-807997
20000516	
CN 1243726 C	CN 2000-807997
20000516	
DE 60023134 E	DE 2000-623134
20000516	
DE 60023134 T2	DE 2000-623134
20000516	
EP 1181268 A1	EP 2000-935980
20000516	
EP 1181268 B1	EP 2000-935980
20000516	
EP 1181268 B8	EP 2000-935980
20000516	
DE 60023134 E	EP 2000-935980
20000516	
DE 60023134 T2	EP 2000-935980
20000516	
ES 2249271 T3	EP 2000-935980
20000516	
JP 2003500468 W	JP 2000-621328
20000516	
BR 2000010997 A	WO 2000-US13374
20000516	
EP 1181268 A1	WO 2000-US13374
20000516	
JP 2003500468 W	WO 2000-US13374
20000516	
EP 1181268 B1	WO 2000-US13374
20000516	
EP 1181268 B8	WO 2000-US13374
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DE 60023134 E	WO 2000-US13374
20000516	
DE 60023134 T2	WO 2000-US13374
20000516	
RO 120909 B1	WO 2000-US13374
20000516	
RO 120909 B1	RO 2001-1268
20000516	
ZA 2001009165 A	ZA 2001-9165
20011106	
KR 2002003572 A	KR 2001-715230
20011127	
US 20030198586 A1	US 2001-16703
20011210	
US 6667020 B2	US 2001-16703
20011210	
EP 1520852 A2	EP 2004-78068
19990527	
CN 1629072 A	CN 2004-10095706
20000516	
EP 1181268 B1 Related to	EP 2004-78068 20041109
EP 1181268 B8 Related to	EP 2004-78068 20041109
CN 1267347 C	CN 2004-10095706
20000516	

FILING DETAILS:

PATENT NO	KIND		PATENT NO	
EP 1520852	A2	Div ex	EP 1181268	A
DE 60023134	E	Based on	EP 1181268	A
DE 60023134	T2	Based on	EP 1181268	A
ES 2249271	T3	Based on	EP 1181268	A
EP 1181268	B1	Related to	EP 1520852	A
EP 1181268	B8	Related to	EP 1520852	A
US 20030198586	A1	Cont of	US 6413485	B
US 6667020	B2	Cont of	US 6413485	B
AU 2000051359	A	Based on	WO 2000073261	A
BR 2000010997	A	Based on	WO 2000073261	A
EP 1181268	A1	Based on	WO 2000073261	A
JP 2003500468	W	Based on	WO 2000073261	A
EP 1181268	B1	Based on	WO 2000073261	A
EP 1181268	B8	Based on	WO 2000073261	A
DE 60023134	E	Based on	WO 2000073261	A
DE 60023134	T2	Based on	WO 2000073261	A
RO 120909	B1	Based on	WO 2000073261	A

PRIORITY APPLN. INFO: US 1999-320937 19990527
US 2001-16703 20011210

AB WO 2000073261 A1 UPAB: 20060202

NOVELTY - Process for increasing the yield of co-product HCN and **acetonitrile** produced during the manufacture of **acrylonitrile** comprises introducing a hydrocarbon selected from propylene or propane, a crude ketone, ammonia and air into a reaction zone containing an ammoxidation **catalyst**, then reacting these over the **catalyst** at an elevated temperature to produce **acrylonitrile**, hydrogen cyanide and **acetonitrile**, and recovering the **acrylonitrile**, hydrogen cyanide and **acetonitrile** from the reactor.

DETAILED DESCRIPTION - INDEPENDENT CLAIMS are also provided for:

(a) another process for increasing the yield of co-product HCN and **acetonitrile**, which is as above except that a mixture of at least two ketone is used;

(b) process for the ammoxidation of a mixture of 1-4 C ketones to produce a HCN and **acetonitrile**, as above; and

(c) ammoxidation of a crude ketone to produce HCN and **acetonitrile**.

USE - A process for increasing the yield of HCN and **acetonitrile** during the manufacture of **acrylonitrile** is provided.

ADVANTAGE - The process saves on the raw material costs and achieves the same or better conversion and selectivity to the desired co-products.

L68 ANSWER 27 OF 32 WPIX COPYRIGHT 2007 THE THOMSON CORP on STN

ACCESSION NUMBER: 1995-052425 [07] WPIX

CROSS REFERENCE: 1994-064818

DOC. NO. CPI: C1995-024023 [07]

TITLE: **Acrylonitrile** mfr. with reduced ammonia breakthrough - by ammoxidation of propane or propylene@ in fluidised **catalyst** bed and introducing an oxygenate to react with unreacted ammonia.

DERWENT CLASS: A41; E16

INVENTOR: BIGLER K L; BOTT P E; FRIEDRICH M S; KECKLER K P; KOCJANCIC F J; MIKO S J; REILING V G; REILLING V G; ROWE S J; SEELY M J; SHAW W G; SHUKI A R; SOCKELL E J; SURESH D D; TROTT L R

PATENT ASSIGNEE: (STAH-C) STANDARD OIL CO OHIO

COUNTRY COUNT: 14

PATENT INFO ABBR.:

PATENT NO	KIND	DATE	WEEK	LA	PG	MAIN IPC
ZA 9401200	A	19941130	(199507)*	EN	23[0]	

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EP 638546      A1 19950215 (199511) EN 10[0]
<--
JP 07053494    A 19950228 (199517) JA 8[0]
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BR 9400642     A 19950328 (199519) PT
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US 5457223     A 19951010 (199546) EN 7[0]
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CN 1107464     A 19950830 (199732) ZH
<--
MX 184642      B 19970509 (199823) ES
<--
RO 113343      B1 19980630 (199845) RO
<--
EP 638546      B1 19981118 (199850) EN
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DE 69414660    E 19981224 (199906) DE
<--
ES 2125401     T3 19990301 (199916) ES
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RU 2124476     C1 19990110 (200019) RU
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KR 297039      B 20011122 (200243)# KO
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KR 308435      B 20011130 (200246) KO
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TW 496857      A 20020801 (200330) ZH
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TW 555737      A 20031001 (200423) ZH
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CN 1037767     C 19980318 (200455) ZH
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APPLICATION DETAILS:

PATENT NO	KIND	APPLICATION	DATE
ZA 9401200 A		ZA 1994-1200	
19940222			
US 5457223 A CIP of		US 1992-959237	
19921009			
US 5457223 A		US 1993-104752	
19930811			
KR 297039 B		KR 1993-24913	
19931122			
DE 69414660 E		DE 1994-69414660	
19940204			
EP 638546 A1		EP 1994-300858	
19940204			
EP 638546 B1		EP 1994-300858	
19940204			
DE 69414660 E		EP 1994-300858	
19940204			

10/717846

ES 2125401 T3 19940204	EP 1994-300858
RU 2124476 C1 19940209	RU 1994-3820
KR 308435 B 19940217	KR 1994-2840
CN 1107464 A 19940221	CN 1994-101370
CN 1037767 C 19940221	CN 1994-101370
JP 07053494 A 19940221	JP 1994-21714
MX 184642 B 19940221	MX 1994-1300
RO 113343 B1	RO 1994-257 19940221
BR 9400642 A	BR 1994-642 19940222
TW 496857 A 19940315	TW 1994-102250
TW 555737 A 19940315	TW 2002-113379

FILING DETAILS:

PATENT NO	KIND	PATENT NO
DE 69414660 E	Based on	EP 638546 A
ES 2125401 T3	Based on	EP 638546 A
KR 308435 B	Previous Publ	KR 95005804 A
KR 297039 B	Previous Publ	KR 95014062 A
US 5457223 A	CIP of	US 5288473 A

PRIORITY APPLN. INFO: ZA 1994-1200 19940222
 US 1993-104752 19930811
 KR 1993-24913 19931122

AB ZA 9401200 A UPAB: 20050702
 A process for mfr. of **acrylonitrile** with reduced breakthrough of ammonia into the reactor effluent comprises introducing a reaction mixture of propane or propylene, ammonia and an oxygen-containing gas into the lower portion of a fluid bed reactor containing a fluid bed ammoxidation **catalyst** to react to form an **acrylonitrile**-containing prod. stream, and introducing in an upward direction at least one oxygenate (I) capable of reacting with ammonia into the upper portion of the fluid bed reactor at a point where the (I) does not substantially affect the reaction of the hydrocarbon, ammonia and O2-containing gas to form **acrylonitrile** but reacts with at least part of the unreacted ammonia present in the reactor.
 ADVANTAGE - Input of (I) gives a substantial reduction in the amount of ammonia present in the reactor effluent.

L68 ANSWER 28 OF 32 WPIX COPYRIGHT 2007 THE THOMSON CORP on STN
 ACCESSION NUMBER: 1994-064818 [08] WPIX
 CROSS REFERENCE: 1995-052425
 DOC. NO. CPI: C1994-029035 [08]
 TITLE: Elimination of ammonia break-through in **acrylonitrile** production - comprises introducing methanol into the fluid bed reactor at a specific location and direction
 DERWENT CLASS: A41; E16; E35
 INVENTOR: BIGLER K L; BIGLER L K; BOTT E P; BOTT P E; FRIEDRICH M S; FRIEDRICH S M; KECKLER K P; KECKLER P K; KOCJANCIC J F; KOJANCIC F J; MIKO J S; MIKO S J; REILING G V; REILING V G; SEELY J M; **SEELY M J**; SHAW G W; SHAW W G; SHUKI A R; SHUKI R A; SOCKELL E J; SOCKELL J E; SURESH D D; TROTT L R; TROTT R L
 PATENT ASSIGNEE: (STAH-C) STANDARD OIL CO OHIO
 COUNTRY COUNT: 5

PATENT INFO ABBR.:

PATENT NO	KIND	DATE	WEEK	LA	PG	MAIN IPC
US 5288473	A	19940222	(199408)*	EN	7[0]	
<--						
JP 07126237	A	19950516	(199528)#	JA	8	
<--						
BR 9304451	A	19950627	(199534)#	PT		
<--						
CN 1102641	A	19950517	(199726)#	ZH		
<--						
RO 113342	B1	19980630	(199845)#	RO		
<--						
CN 1039007	C	19980708	(200457)#	ZH		
<--						

APPLICATION DETAILS:

PATENT NO	KIND	APPLICATION	DATE
US 5288473 A		US 1992-959237	
19921009			
RO 113342 B1		RO 1993-1442	
19931026			
BR 9304451 A		BR 1993-4451	
19931101			
JP 07126237 A		JP 1993-276646	
19931105			
CN 1102641 A		CN 1993-112678	
19931108			
CN 1039007 C		CN 1993-112678	
19931108			

PRIORITY APPLN. INFO: US 1992-959237 19921009
 RO 1993-1442 19931026
 BR 1993-4451 19931101
 JP 1993-276646 19931105
 CN 1993-112678 19931108

AB US 5288473 A UPAB: 20050507

Process comprises (a) introducing into the lower portion of a fluid bed reactor a hydrocarbon selected from propylene and propane, ammonia and oxygen-containing gas to react in the presence of a fluid bed catalyst to produce acrylonitrile, (b) introducing an oxygenate comprising methanol at a temperature below its coking temperature into the upper portion of the fluid bed reactor at a point where the methanol does not affect the reaction of the hydrocarbon, ammonia and oxygen-containing gas and reacts with all the unreacted ammonia present in the reactor to eliminate the presence of any free ammonia in the reactor effluent exiting the reactor, (c) passing the reactor effluent containing acrylonitrile into a quench column to cool the reactor effluent with water in the absence of sulphuric acid to remove unwanted impurities, and (d) recovering acrylonitrile from the quench column.

USE/ADVANTAGE - The method is used to eliminate unreacted ammonia and reduce the amount of ammonium sulphate produced in the mfr. of acrylonitrile. The process is simple and economical.

L68 ANSWER 29 OF 32 WPIX COPYRIGHT 2007 THE THOMSON CORP on STN
 ACCESSION NUMBER: 1993-264708 [33] WPIX
 CROSS REFERENCE: 1992-276576
 DOC. NO. CPI: C1993-118073 [33]
 TITLE: Acrylonitrile and/or
 methacrylonitrile production - by olefin

10/717846

ammoxidation using oxide **catalyst**
containing molybdenum, bismuth, iron, cobalt, nickel,
chromium, phosphorus, antimony and alkali metal
A41; E16
PAPARIZOS C; SHAW W G
(STAH-C) STANDARD OIL CO OHIO
1

DERWENT CLASS:
INVENTOR:
PATENT ASSIGNEE:
COUNTRY COUNT:

PATENT INFO ABBR.:

PATENT NO	KIND	DATE	WEEK	LA	PG	MAIN IPC
US 5235088	A	19930810	(199333)*	EN	6[0]	
<--						

APPLICATION DETAILS:

PATENT NO	KIND	APPLICATION	DATE
US 5235088 A Div Ex		US 1990-495875	
19900319			
US 5235088 A		US 1992-881581	
19920512			

FILING DETAILS:

PATENT NO	KIND	PATENT NO
US 5235088 A	Div ex	US 5134105 A

PRIORITY APPLN. INFO: US 1992-881581 19920512
US 1990-495875 19900319

AB US 5235088 A UPAB: 20050701
Conversion of propylene and/or isobutylene to **acrylonitrile** and/or methacrylonitrile respectively is effected by vapour-phase reaction with O₂-containing gas and NH₃ at 300-600 deg. C in the presence of an oxide **catalyst** of formula (I):
MoaBibFecCodNieCrfgYizjOk (I)
X = a mixture of P and Sb; Y = alkali metal(s); Z = alkaline earth metal, rare earth metal, Nb, Ti, As, Zn, Cd, V, B, Sn, Ge, Mn, W and/or Te; a = 12-14; b = 1-5; c = 0.5-5; d and e = 0.1-6; f and g = 0.1-4; i = 0.1-2; j = 0-3; and k = a number determined by the valance requirements of the other elements. Pref. **catalyst** has g = 0.75-3 and is supported on SiO₂, giving a composite containing 10-70 (especially 40-60) weight% support.

ADVANTAGE - The **catalysts** are inexpensive, have high activity, giving at least 80% yields at temps. slightly lower than normal, and have good stability. Low air:olefin ratios and high space velocities may be used. NH₃ utilisation is efficient.

L68 ANSWER 30 OF 32 WPIX COPYRIGHT 2007 THE THOMSON CORP on STN
ACCESSION NUMBER: 1993-066451 [08] WPIX
DOC. NO. CPI: C1993-029658 [21]
TITLE: **Catalyst** for production of

phthalonitrile(s) from xylene with
oxygen and ammonia - formed by calcining
iron-antimony oxide cpd and combining with
vanadium and bismuth, for improved prod. per pass
conversion and greater prod. selectivity

DERWENT CLASS: A41; E14; F01; J04
INVENTOR: **PAPARIZOS C; SHAW W G**
PATENT ASSIGNEE: (STAH-C) STANDARD OIL CO OHIO
COUNTRY COUNT: 1

PATENT INFO ABBR.:

PATENT NO	KIND	DATE	WEEK	LA	PG	MAIN IPC
US 5183793	A	19930202	(199308)*	EN	4[0]	

<--

APPLICATION DETAILS:

PATENT NO	KIND	APPLICATION	DATE
US 5183793 A		US 1991-789836	
19911113			

PRIORITY APPLN. INFO: US 1991-789836 19911113

AB US 5183793 A UPAB: 20060503

A **catalyst** suitable for ammoxidation has the formula V1BiaSbbFecXdYcZfOg, where X is Mo, Cu, W, Nb, Te, P, Sn, Ge or As, Y is Co, Ni, Ce, La, Mn or Cr, Z is an alkali or alkaline earth metal, B or Tl and a= 0.1-10, b= 0.01-20, c=0.01-5, d=0-5, e=0-3, f=0-1 and g is determined by valence requirements. The **catalyst** is formed by calcining a preformed Fe-Sb oxide compsn. and combining it with V, Bi and other opt. metal cpds.

USE/ADVANTAGE - The **catalyst** is used in the formation of **phthalonitriles** (pref. **isophthalonitrile**) from the reaction of xylenes (pref. m-xylene) with O₂ and NH₃ at elevated temps. **Phthalonitriles** are useful starting materials for the production of polymers for e.g. synthetic fibres, agricultural chemicals and pharmaceuticals. The **catalyst** results in an improved prod. per pass conversion and increased prod. selectivity

L68 ANSWER 31 OF 32 WPIX COPYRIGHT 2007 THE THOMSON CORP on STN

ACCESSION NUMBER: 1981-58674D [32] WPIX

TITLE: Metal complex **catalysts** e.g. of nickel
or zinc - useful for contact decomposition of
hydroperoxide(s)

DERWENT CLASS: A41; E14

INVENTOR: DOLHYJ S R; PAPARIZOS C; VELENYI L J

PATENT ASSIGNEE: (STAH-C) STANDARD OIL CO OHIO

COUNTRY COUNT: 1

PATENT INFO ABBR.:

PATENT NO	KIND	DATE	WEEK	LA	PG	MAIN IPC
US 4279829	A	19810721	(198132)*	EN	6	

<--

APPLICATION DETAILS:

PATENT NO	KIND	APPLICATION	DATE
US 4279829 A		US 1978-973070	
19781226			
US 4279829 A		US 1979-90161	
19791031			

AB US 4279829 A UPAB: 20050419

Catalysts are claimed with the formula (I) in which M is a positively charged metal or metal cpd.; Z is S, O, P, S-P or S-S; L is C, P or N; A is one or more of H, 1-30C alkoxy, N-R₂ in which R is H, 1-30C alkyl and phenyl or phenyl substd. with one or more 1-20C alkyl and 1-20C alkoxy; and 1-30C hydrocarbon gps. or 1-30C hydrocarbon gps. substd. with one or more substituents chosen from halogen, 1-12C hydroxy gps., 1-12C acid gps., 1-12C aldehyde gps., 1-12C ketone gps. and 1-10C **nitrile** cpds.; and n is 1 or 2 and b is 1, 2 or 3. with the proviso that when Z is S or O, A is one or more of halogen, H, NH₂ and 1-30C hydrocarbon gp. or 1-30C hydrocarbon gps. substd. with one or more halogen, 1-12C hydroxy gps., 1-12C acid gps., 1-12C aldehyde gps., 1-12C ketone gps., and 1-10C **nitrile** gps.

M is pref. a gp. IIB, IB or VIII transition metal, especially Zn or Ni; Z is S, O or P; and A is phenyl, phenyl substd. with one or more 1-8C alkyl, a 1-30C alkoxy, an amino gp. or an amino gp. substd. by one or more 1-4C alkyl gps.

The **catalysts** are especially useful for contact decomposition of hydroperoxides as described in parent specification US4262153 (32533 D/18), e.g. in the production of phenol by decomposition of cumene hydroperoxide and cyclohexylbenzene hydroperoxide.

L68 ANSWER 32 OF 32 WPIX COPYRIGHT 2007 THE THOMSON CORP on STN
 ACCESSION NUMBER: 1981-32533D [18] WPIX
 TITLE: Decomposition of hydro:peroxide(s) - by
 contacting with metal complex **catalyst**
 DERWENT CLASS: A41; E14
 INVENTOR: DOLHYJ S R; **PAPARIZOS C**; VELENYI L
 PATENT ASSIGNEE: (STAH-C) STANDARD OIL CO OHIO
 COUNTRY COUNT: 2

PATENT INFO ABBR.:

PATENT NO	KIND	DATE	WEEK	LA	PG	MAIN IPC
US 4262153	A	19810414	(198118)*	EN		
<--						
CA 1141770	A	19830222	(198312)#	EN		
<--						

APPLICATION DETAILS:

PATENT NO	KIND	APPLICATION	DATE
US 4262153 A		US 1978-973070	
19781226			
US 4262153 A		US 1979-90161	
19791031			
CA 1141770 A		CA 1980-366808	
19801215			

AB US 4262153 A UPAB: 20050419
 Hydroperoxide is decomposed by contact with a **catalyst** of formula (I) where M is a positively charged metal or its cpd.; Z is S, O, P, S-P or S-S; L is C, P or N, A is H, halogen, 1-30C alkoxy, NR₂ in which R is H, 1-30C alkyl or 4-8 membered aryl opt. substd. by 1-20C alkyl or alkoxy, or up to 30C hydrocarbon gp. opt. substd. by halogen, 1-12C hydroxy, acid, aldehyde or ketone containing gp. or 1-10C **nitrile** containing gp.; n is 1 or 2; and 1-3; provided that when Z is S or O, then A is H, halogen, NH₂ or opt. substd. hydrocarbon gp.
 Phenol can be produced with high yields and selectivities by decomposing cumene or cyclohexyl-benzene hydroperoxide using the **catalyst**. Alcohol, ketone and aldehydes prods. can be used as monomers, solvents and intermediates.

TEXT SEARCH

=> d his 140

(FILE 'REGISTRY' ENTERED AT 10:48:03 ON 28 MAR 2007)
 L40 12 S L32 OR L37-L39

=> d que 140

L32 12 SEA FILE=REGISTRY ABB=ON PLU=ON (K(L)CS(L)CE(L)CR(L)C
 O(L)NI(L)FE(L)BI(L)MO(L)O)/ELS
 L37 6 SEA FILE=REGISTRY ABB=ON PLU=ON (RB OR NA OR LI OR
 TL)/ELS AND L32
 L38 11 SEA FILE=REGISTRY ABB=ON PLU=ON (P OR SB OR TE OR B
 OR GE OR W OR CA OR MG OR LNTH/PG OR ACTN/PG)/ELS AND
 L32
 L39 5 SEA FILE=REGISTRY ABB=ON PLU=ON L38 AND L37
 L40 12 SEA FILE=REGISTRY ABB=ON PLU=ON L32 OR (L37 OR L38
 OR L39)

=> d his 163

(FILE 'RAPRA, WPIX' ENTERED AT 12:00:11 ON 28 MAR 2007)
 SAV L62 SAC846IN/A

FILE 'STNGUIDE' ENTERED AT 12:02:26 ON 28 MAR 2007

FILE 'HCAPLUS' ENTERED AT 12:30:53 ON 28 MAR 2007

FILE 'REGISTRY' ENTERED AT 12:32:12 ON 28 MAR 2007
 L63 9 S L44 OR L45

=> d que 163

L32 12 SEA FILE=REGISTRY ABB=ON PLU=ON (K(L)CS(L)CE(L)CR(L)C
 O(L)NI(L)FE(L)BI(L)MO(L)O)/ELS
 L44 7 SEA FILE=REGISTRY ABB=ON PLU=ON L32 AND P/ELS
 L45 3 SEA FILE=REGISTRY ABB=ON PLU=ON L32 AND MG/ELS
 L63 9 SEA FILE=REGISTRY ABB=ON PLU=ON L44 OR L45

=> d his 167

(FILE 'HCAPLUS' ENTERED AT 12:32:24 ON 28 MAR 2007)

L67 7 S L66 AND L50

=> d que 167

L23 635119 SEA FILE=HCAPLUS ABB=ON PLU=ON CATALYSTS+PFT,OLD,NT/C
T

L32 12 SEA FILE=REGISTRY ABB=ON PLU=ON (K(L)CS(L)CE(L)CR(L)C
O(L)NI(L)FE(L)BI(L)MO(L)O)/ELS

L37 6 SEA FILE=REGISTRY ABB=ON PLU=ON (RB OR NA OR LI OR
TL)/ELS AND L32

L38 11 SEA FILE=REGISTRY ABB=ON PLU=ON (P OR SB OR TE OR B
OR GE OR W OR CA OR MG OR LNTH/PG OR ACTN/PG)/ELS AND
L32

L39 5 SEA FILE=REGISTRY ABB=ON PLU=ON L38 AND L37

L40 12 SEA FILE=REGISTRY ABB=ON PLU=ON L32 OR (L37 OR L38
OR L39)

L41 10 SEA FILE=HCAPLUS ABB=ON PLU=ON L40

L42 9 SEA FILE=HCAPLUS ABB=ON PLU=ON L40/CAT

L44 7 SEA FILE=REGISTRY ABB=ON PLU=ON L32 AND P/ELS

L45 3 SEA FILE=REGISTRY ABB=ON PLU=ON L32 AND MG/ELS

L46 29606 SEA FILE=HCAPLUS ABB=ON PLU=ON ACRYLONITRILE+PFT,OLD,
NT/CT

L47 5762 SEA FILE=HCAPLUS ABB=ON PLU=ON L46 AND L23

L48 6 SEA FILE=HCAPLUS ABB=ON PLU=ON L41 AND L47

L49 10 SEA FILE=HCAPLUS ABB=ON PLU=ON L48 OR L42

L50 QUE ABB=ON PLU=ON PY<2003 OR PRY<2003 OR AY<2003 OR
MY<2003 OR REVIEW/DT

L63 9 SEA FILE=REGISTRY ABB=ON PLU=ON L44 OR L45

L64 7 SEA FILE=HCAPLUS ABB=ON PLU=ON L63/CAT

L66 10 SEA FILE=HCAPLUS ABB=ON PLU=ON L64 OR L49

L67 7 SEA FILE=HCAPLUS ABB=ON PLU=ON L66 AND L50

=> d 167 1-7 ibib ed abs hitstr hitind

L67 ANSWER 1 OF 7 HCAPLUS COPYRIGHT 2007 ACS on STN

ACCESSION NUMBER: 2003:305713 HCAPLUS Full-text

DOCUMENT NUMBER: 138:327217

TITLE: Production method of ammoxidation catalyst

INVENTOR(S): Miyaki, Kenichi; Yanagida, Motoo; Mori, Kunio

PATENT ASSIGNEE(S): Daiya Nitrics K. K., Japan

SOURCE: Jpn. Kokai Tokkyo Koho, 11 pp.

CODEN: JKXXAF

DOCUMENT TYPE: Patent

LANGUAGE: Japanese

FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
JP 2003117397	A	20030422	JP 2001-314054	2001 1011
WO 2003033139	A1	20030424	WO 2002-JP9832	2002 0925

<--

W: CN, KR, RO, US

RW: AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR,

IE, IT, LU, MC, NL, PT, SE, SK, TR

EP 1452231 A1 20040901 EP 2002-779893

2002

0925

<--

R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE,
MC, PT, IE, FI, CY, TR, BG, CZ, EE, SK

CN 1568223 A 20050119 CN 2002-819966

2002

0925

<--

US 2004248734 A1 20041209 US 2004-490219

2004

0401

<--

PRIORITY APPLN. INFO.:

JP 2001-314054 A

2001

1011

<--

WO 2002-JP9832 W

2002

0925

<--

ED Entered STN: 22 Apr 2003

AB The invention refers to a production method for an ammoxidn. catalyst, suitable for producing acrylonitrile from propylene. The catalyst comprises (1) Mo, (2) Bi, and (3) at least one element selected from Ni, Co, Zn, Mg, Mn or Cu and (4) at least one element selected from La, Ce, Pr or Nd, and during the manufacture of the catalyst the raw materials for the 4th component is added to a solution containing raw materials for the first three components.

IT 512173-57-8

RL: CAT (Catalyst use); DEV (Device component use); USES
(Uses)

(production method of ammoxidn. catalyst)

RN 512173-57-8 HCAPLUS

CN Bismuth cerium cesium chromium cobalt iron magnesium molybdenum
nickel potassium samarium silicon tellurium oxide (9CI) (CA INDEX
NAME)

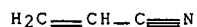
Component	Ratio	Component Registry Number
O	x	17778-80-2
Te	x	13494-80-9
Bi	x	7440-69-9
Co	x	7440-48-4
Cr	x	7440-47-3
Cs	x	7440-46-2
Ce	x	7440-45-1
Si	x	7440-21-3
Sm	x	7440-19-9
K	x	7440-09-7
Ni	x	7440-02-0
Mo	x	7439-98-7
Mg	x	7439-95-4
Fe	x	7439-89-6

IT 107-13-1P, Acrylonitrile, preparation

RL: SPN (Synthetic preparation); PREP (Preparation)
(production method of ammoxidn. catalyst)

RN 107-13-1 HCAPLUS

CN 2-Propenenitrile (CA INDEX NAME)



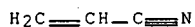
IC ICM B01J027-192
ICS B01J023-88; B01J027-057; B01J037-04; B01J037-08; C07B061-00;
C07C253-26; C07C255-08
CC 67-1 (Catalysis, Reaction Kinetics, and Inorganic Reaction
Mechanisms)
Section cross-reference(s): 21, 35
IT **Ammoxidation catalysts**
(production method of ammoxidn. catalyst)
IT 512173-53-4 512173-54-5 512173-55-6 512173-56-7
512173-57-8 512173-58-9 512173-59-0 512173-60-3
512173-61-4 512173-62-5
RL: **CAT (Catalyst use)**; DEV (Device component use); USES
(Uses)
(production method of ammoxidn. catalyst)
IT **107-13-1P**, Acrylonitrile, preparation
RL: SPN (Synthetic preparation); PREP (Preparation)
(production method of ammoxidn. catalyst)

L67 ANSWER 2 OF 7 HCAPLUS COPYRIGHT 2007 ACS on STN
ACCESSION NUMBER: 2002:610508 HCAPLUS Full-text
DOCUMENT NUMBER: 137:155271
TITLE: Fluidized bed catalyst for ammoxidation of
propylene into acrylonitrile
INVENTOR(S): Xie, Guohuang; Chen, Xin; Wu, Lianghua
PATENT ASSIGNEE(S): China Petrochemical Group Corp., Peop. Rep.
China
SOURCE: Faming Zhuanli Shenqing Gongkai Shuomingshu, 8
pp.
CODEN: CNXXEV
DOCUMENT TYPE: Patent
LANGUAGE: Chinese
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
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CN 1310046	A	20010829	CN 2000-111715	2000 0224

PRIORITY APPLN. INFO.: <--
CN 2000-111715
2000
0224

ED Entered STN: 16 Aug 2002
AB The catalyst comprises a silica support and a mixed oxide AaBbCcGedMneWfFegBihMoiOx,
where A = Li, Na, K, Rb and Cs; B = Co, Ni, Cr, Ca, Mg, La, Ce and V; C = B, P and As;
a = 0.01-1.5, b = 0.1-12, c = 0.1-0.6, d = 0.01-2.0, e = 0.01-2.5, f = 0.05- 1.5, g =
0.1-4, h = 0.2-2.5, i = 12-14.5, and x = number that balances the valency. The use of
the catalyst can enhance the conversion of propylene and acrylonitrile yield.
K0.1Cs0.07P0.02Ni5.6Cr0.35Ce0.35Mg1.2Ge0.05Mn0.2W0.15Fe2.0Bi0.75Mo13.00x was prepared
and used for ammoxidn. of propylene into acrylonitrile with yield 80.3%.
IT **107-13-1P**, Acrylonitrile, preparation **446036-48-2P**
446036-50-6P
RL: IMF (Industrial manufacture); PREP (Preparation)
(fluidized bed catalyst for ammoxidn. of propylene into
acrylonitrile)
RN 107-13-1 HCAPLUS
CN 2-Propenenitrile (CA INDEX NAME)



RN 446036-48-2 HCAPLUS
 CN Bismuth cerium cesium chromium cobalt germanium iron magnesium
 manganese molybdenum nickel potassium tungsten oxide phosphate
 (9CI) (CA INDEX NAME)

Component	Ratio	Component Registry Number
=====	=====	=====
O	x	17778-80-2
O4P	x	14265-44-2
Bi	x	7440-69-9
Ge	x	7440-56-4
Co	x	7440-48-4
Cr	x	7440-47-3
Cs	x	7440-46-2
Ce	x	7440-45-1
W	x	7440-33-7
K	x	7440-09-7
Ni	x	7440-02-0
Mo	x	7439-98-7
Mn	x	7439-96-5
Mg	x	7439-95-4
Fe	x	7439-89-6

RN 446036-50-6 HCAPLUS
 CN Bismuth cerium cesium chromium cobalt germanium iron magnesium
 manganese molybdenum nickel potassium rubidium tungsten oxide
 (9CI) (CA INDEX NAME)

Component	Ratio	Component Registry Number
=====	=====	=====
O	x	17778-80-2
Bi	x	7440-69-9
Ge	x	7440-56-4
Co	x	7440-48-4
Cr	x	7440-47-3
Cs	x	7440-46-2
Ce	x	7440-45-1
W	x	7440-33-7
Rb	x	7440-17-7
K	x	7440-09-7
Ni	x	7440-02-0
Mo	x	7439-98-7
Mn	x	7439-96-5
Mg	x	7439-95-4
Fe	x	7439-89-6

IC ICM B01J027-192
 ICS B01J023-84; B01J023-835; C07C255-08
 CC 35-2 (Chemistry of Synthetic High Polymers)
 IT **Ammoxidation catalysts**
 (mixed oxide; fluidized bed catalyst for ammoxidn. of propylene
 into acrylonitrile)
 IT **107-13-1P**, Acrylonitrile, preparation 446036-44-8P
 446036-45-9P 446036-46-0P 446036-47-1P **446036-48-2P**
 446036-49-3P **446036-50-6P**
 RL: IMF (Industrial manufacture); PREP (Preparation)
 (fluidized bed catalyst for ammoxidn. of propylene into
 acrylonitrile)

L67 ANSWER 3 OF 7 HCAPLUS COPYRIGHT 2007 ACS on STN
 ACCESSION NUMBER: 2002:246980 HCAPLUS Full-text
 DOCUMENT NUMBER: 136:265297
 TITLE: Manufacture of hydrogen cyanide by

10/717846

ammoxidation with fluidized-bed catalysts
 INVENTOR(S): Miyaki, Kenichi; Mori, Kunio
 PATENT ASSIGNEE(S): Mitsubishi Rayon Co., Ltd., Japan
 SOURCE: Jpn. Kokai Tokkyo Koho, 8 pp.
 CODEN: JKXXAF
 DOCUMENT TYPE: Patent
 LANGUAGE: Japanese
 FAMILY ACC. NUM. COUNT: 1
 PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
JP 2002097017	A	20020402	JP 2000-286452	2000 0921
JP 3872269	B2	20070124	JP 2000-286452	2000 0921

PRIORITY APPLN. INFO.: <--

ED Entered STN: 02 Apr 2002

AB HCN is manufactured by ammoxidn. of MeOH with fluidized-bed catalysts having compns.:
 $\text{Mo}_{10}\text{Bi}_a\text{Fe}_b\text{S}_{bc}\text{Ni}_d\text{Cr}_{ff}\text{GgMl}_h\text{KkM}_{2m}\text{X}_x\text{YyO}_i(\text{SiO}_2)_j$ (F = Y, La, Ce, Pr, Nd, Sm, Al, and/or Ga;
 G = Mg, Ca, Sr, Ba, Mn, Co, Cu, Zn, and/or Cd; Ml = Ti, Zr, V, Nb, Ta, W, Ge, Sn,
 and/or Pb; M2 = Ru, Rh, Pd, Re, Os, Ir, Pt, and/or Ag; X = P, B, and/or Te; Y = Li, Na,
 Rb, Cs, and/or Tl; a = 0.2-1.5, b = 0.7-1.5, c = 0-20, d = 3-8, e = 0.1-2.5, f = 0.1-
 1.5, g = 0-5, h = 0-3, k = 0.05-1.5, m = 0-1, x = 0-3, y = 0-1, i = atomic ratio of O,
 j = 20-200; 20/p = 0.8-1; p = sum of (valence) + (atomic ratio) of Bi, Fe, Ni, Cr, K,
 F, G, and Y). Preferably, Mo compds. are added during the reaction. The catalysts
 have stable structures and give HCN in high yields.

IT 405233-88-7P

RL: CAT (Catalyst use); IMF (Industrial manufacture);

PREP (Preparation); USES (Uses)

(catalyst component; manufacture of HCN by ammoxidn. of MeOH with
 fluidized-bed catalysts)

RN 405233-88-7 HCAPLUS

CN Antimony bismuth cerium cesium chromium cobalt iron molybdenum
 nickel phosphorus potassium ruthenium oxide (9CI) (CA INDEX NAME)

Component	Ratio	Component Registry Number
O	x	17778-80-2
P	x	7723-14-0
Bi	x	7440-69-9
Co	x	7440-48-4
Cr	x	7440-47-3
Cs	x	7440-46-2
Ce	x	7440-45-1
Sb	x	7440-36-0
Ru	x	7440-18-8
K	x	7440-09-7
Ni	x	7440-02-0
Mo	x	7439-98-7
Fe	x	7439-89-6

IC ICM C01C003-02

ICS C01C003-02; B01J023-88; B01J027-057; B01J027-192

CC 49-2 (Industrial Inorganic Chemicals)

Section cross-reference(s): 67

IT 156260-89-8P, Bismuth cerium chromium cobalt iron molybdenum
 nickel phosphorus potassium oxide 405220-76-0P 405220-77-1P
 405220-78-2P 405220-79-3P 405233-78-5P 405233-79-6P
 405233-86-5P 405233-87-6P 405233-88-7P

RL: CAT (Catalyst use); IMF (Industrial manufacture);

PREP (Preparation); USES (Uses)
(catalyst component; manufacture of HCN by ammoxidn. of MeOH with
fluidized-bed catalysts)

L67 ANSWER 4 OF 7 HCAPLUS COPYRIGHT 2007 ACS on STN
ACCESSION NUMBER: 2002:244582 HCAPLUS Full-text
DOCUMENT NUMBER: 136:265296
TITLE: Manufacture of hydrogen cyanide by
ammoxidation with fluidized-bed catalysts
INVENTOR(S): Miyaki, Kenichi; Mori, Kunio
PATENT ASSIGNEE(S): Mitsubishi Rayon Co., Ltd., Japan
SOURCE: Jpn. Kokai Tokkyo Koho, 8 pp.
CODEN: JKXXAF
DOCUMENT TYPE: Patent
LANGUAGE: Japanese
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
JP 2002097016	A	20020402	JP 2000-286450	2000 0921
			<--	
JP 3872268	B2	20070124	JP 2000-286450	2000 0921
PRIORITY APPLN. INFO.:				
			<--	

ED Entered STN: 02 Apr 2002

AB HCN is manufactured by ammoxidn. of MeOH with fluidized-bed catalysts having the
compns.: FeaSbbMocBidKeFfGgMhQqRrTtOx(SiO₂)_y (F = Mg, Ca, Sr, Ba, Mn, Co, Ni, Cu, Ag,
Zn, and/or Cd; G = Cr, Al, Ga, and/or In; M = Y, La, Ce, Pr, Nd, and/or Sm; Q = Ti, Zr,
V, Nb, Ta, W, Ge, Sn, and/or Pb; R = Li, Na, Rb, Cs, and/or Tl; T = B, P, and/or Te;
when a = 10, then b = 5-60, c = 5-50, d = 0.15-5, e = 0.1-5, f = 2-35, g = 0.05-10, h =
0.05-10, h/c > 0.02, q = 0-10, r = 0-5, t = 0-5, x = atomic ratio of O, and y = 20-500;
containing Fe antimonate as a crystal phase). Preferably, Mo compds. are added during
the reaction. The catalysts have stable structures and give HCN in high yields.

IT 405233-94-5P

RL: CAT (Catalyst use); IMF (Industrial manufacture);
PREP (Preparation); USES (Uses)
(catalyst component; manufacture of HCN by ammoxidn. of MeOH with
fluidized-bed catalysts)

RN 405233-94-5 HCAPLUS

CN Antimony bismuth cerium cesium chromium cobalt iron molybdenum
nickel phosphorus potassium oxide (9CI) (CA INDEX NAME)

Component	Ratio	Component Registry Number
O	x	17778-80-2
P	x	7723-14-0
Bi	x	7440-69-9
Co	x	7440-48-4
Cr	x	7440-47-3
Cs	x	7440-46-2
Ce	x	7440-45-1
Sb	x	7440-36-0
K	x	7440-09-7
Ni	x	7440-02-0
Mo	x	7439-98-7
Fe	x	7439-89-6

IC ICM C01C003-02

ICS C01C003-02; B01J023-88; B01J027-057; B01J027-192

CC 49-2 (Industrial Inorganic Chemicals)

10/717846

Section cross-reference(s): 67

IT 15600-71-2P, Iron antimonate (FeSbO₄) 405233-71-8P
 405233-72-9P 405233-73-0P 405233-74-1P 405233-75-2P
 405233-76-3P 405233-77-4P 405233-78-5P 405233-79-6P
 405233-94-5P

RL: **CAT (Catalyst use)**; IMF (Industrial manufacture);
 PREP (Preparation); USES (Uses)
 (catalyst component; manufacture of HCN by ammoxidn. of MeOH with
 fluidized-bed catalysts)

L67 ANSWER 5 OF 7 HCAPLUS COPYRIGHT 2007 ACS on STN

ACCESSION NUMBER: 2002:244581 HCAPLUS Full-text

DOCUMENT NUMBER: 136:265295

TITLE: Manufacture of hydrogen cyanide by
 ammoxidation with fluidized-bed catalysts

INVENTOR(S): Miyaki, Kenichi; Mori, Kunio

PATENT ASSIGNEE(S): Mitsubishi Rayon Co., Ltd., Japan

SOURCE: Jpn. Kokai Tokkyo Koho, 8 pp.

CODEN: JKXXAF

DOCUMENT TYPE: Patent

LANGUAGE: Japanese

FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
JP 2002097015	A	20020402	JP 2000-286453	2000 0921
			<--	
JP 3872270	B2	20070124	JP 2000-286453	2000 0921
PRIORITY APPLN. INFO.:				<--

ED Entered STN: 02 Apr 2002

AB HCN is manufactured by ammoxidn. of MeOH with fluidized-bed catalysts having compns.:
 (FeSb_a)bM₁0BicFedKkM₁mM₂nGgQqRrTtOx(SiO₂)y [(FeSb_a) indicates Sb and Fe forming Fe
 antimonate; M₁ = Mg, Ca, Sr, Ba, Mn, Co, Ni, Cu, Zn, and/or Cd; M₂ = Cr, Y, La, Ce, Pr,
 Nd, Sm, Al, Ga, and/or In; G = Ru, Rh, Pd, Re, Os, Ir, Pt, and/or Ag; Q = Ti, Zr, V,
 Nb, Ta, W, Ge, Sn, Pb, and/or Sb; R = B, P, and/or Te; T = Li, Na, Rb, Cs, and/or Tl; a
 = 0.8-2, b = 0.5-20, c = 0.1-2, d = 0.3-3, k = 0.05-2, m = 3-8, n = 0.1-3, g = 0-0.5, q
 = 0-3, r = 0-3, t = 0-1, x = atomic ratio of O, y = 20-200; 20/p = 0.8-1; p = sum of
 (valence) + (atomic ratio) of Bi, Fe, K, M, N, and T]. Preferably, Mo compds. are
 added during the reaction. The catalysts have stable structures and give HCN in high
 yields.

IT 405220-82-8P

RL: **CAT (Catalyst use)**; IMF (Industrial manufacture);
 PREP (Preparation); USES (Uses)
 (catalyst component; manufacture of HCN by ammoxidn. of MeOH with
 fluidized-bed catalysts)

RN 405220-82-8 HCAPLUS

CN Bismuth cerium cesium chromium cobalt iron molybdenum nickel
 phosphorus potassium ruthenium oxide (9CI) (CA INDEX NAME)

Component	Ratio	Component Registry Number
O	x	17778-80-2
P	x	7723-14-0
Bi	x	7440-69-9
Co	x	7440-48-4
Cr	x	7440-47-3
Cs	x	7440-46-2
Ce	x	7440-45-1
Ru	x	7440-18-8

10/717846

K		x		7440-09-7
Ni		x		7440-02-0
Mo		x		7439-98-7
Fe		x		7439-89-6

IC ICM C01C003-02
ICS C01C003-02; B01J023-88; B01J027-057; B01J027-199; C01B033-20;
B01J008-24

CC 49-2 (Industrial Inorganic Chemicals)
Section cross-reference(s): 67

IT 15600-71-2P, Iron antimonate (FeSbO₄) 156260-89-8P, Bismuth
cerium chromium cobalt iron molybdenum nickel phosphorus potassium
oxide 405220-76-0P 405220-77-1P 405220-78-2P 405220-79-3P
405220-80-6P 405220-81-7P **405220-82-8P** 405220-83-9P
405220-84-0P
RL: **CAT (Catalyst use)**; IMF (Industrial manufacture);
PREP (Preparation); USES (Uses)
(catalyst component; manufacture of HCN by ammoxidn. of MeOH with
fluidized-bed catalysts)

L67 ANSWER 6 OF 7 HCAPLUS COPYRIGHT 2007 ACS on STN

ACCESSION NUMBER: 2001:288839 HCAPLUS Full-text

DOCUMENT NUMBER: 134:311535

TITLE: Catalysts for ammoxidation of propylene for
preparation of acrylonitrile with high yield

INVENTOR(S): Mori, Kunio; Sasaki, Yutaka; Miyaki, Kenichi;
Watanabe, Hirokazu

PATENT ASSIGNEE(S): Mitsubishi Rayon Co., Ltd., Japan; Dia-Nitrix
Co., Ltd.

SOURCE: Jpn. Kokai Tokkyo Koho, 8 pp.

CODEN: JKXXAF

DOCUMENT TYPE: Patent

LANGUAGE: Japanese

FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
-----	----	-----	-----	
JP 2001114740	A	20010424	JP 1999-295914	1999 1018
			<--	
JP 3819192	B2	20060906		
WO 2001028986	A1	20010426	WO 2000-JP7194	2000 1017
			<--	
W: CN, KR, RO, US				
RW: AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU,				
MC, NL, PT, SE				
EP 1223164	A1	20020717	EP 2000-966538	2000 1017
			<--	
EP 1223164	B1	20060913		
R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE,				
MC, PT, IE, FI, RO, CY				
RO 121265	B1	20070228	RO 2002-471	2000 1017
			<--	
US 6653496	B1	20031125	US 2002-110061	2002 0408
			<--	

PRIORITY APPLN. INFO.:

JP 1999-295914 A

1999

1018

<--

WO 2000-JP7194

W

2000

1017

<--

ED Entered STN: 24 Apr 2001

AB The ammoxidn. uses a fluidized bed catalyst comprising Mo, Bi, Fe, K, M components (e.g., Mg, Ca, Ba, etc.), N components (e.g., Cr, Y, Ce, etc.), and silica as essential components at a specific Mo ratio and containing Fe antimonate being present as a crystalline phase. The catalysts are stable for a long period of time.

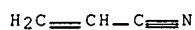
IT 107-13-1P, Acrylonitrile, preparation

RL: IMF (Industrial manufacture); PREP (Preparation)

(ammoxidn. catalysts for propylene for preparation of acrylonitrile with high yield)

RN 107-13-1 HCAPLUS

CN 2-Propenenitrile (CA INDEX NAME)



IT 335233-39-1

RL: CAT (Catalyst use); USES (Uses)

(silica-supported catalysts; ammoxidn. catalysts for propylene for preparation of acrylonitrile with high yield)

RN 335233-39-1 HCAPLUS

CN Antimony bismuth cerium cesium chromium cobalt iron molybdenum nickel potassium ruthenium oxide phosphate
(Sb1.7Bi0.5Ce0.5Cs0.05Cr2Co1.5Fe2.5Mo10Ni4K0.2Ru0.05O47.47(PO4)0.3)
) (9CI) (CA INDEX NAME)

Component	Ratio	Component Registry Number
=====	=====	=====
O	47.47	17778-80-2
O4P	0.3	14265-44-2
Bi	0.5	7440-69-9
Co	1.5	7440-48-4
Cr	2	7440-47-3
Cs	0.05	7440-46-2
Ce	0.5	7440-45-1
Sb	1.7	7440-36-0
Ru	0.05	7440-18-8
K	0.2	7440-09-7
Ni	4	7440-02-0
Mo	10	7439-98-7
Fe	2.5	7439-89-6

IC ICM C07C253-26

ICS B01J023-88; B01J023-89; B01J027-057; B01J027-199; C07C255-08;
C07B061-00

CC 35-2 (Chemistry of Synthetic High Polymers)
Section cross-reference(s): 67

IT Ammoxidation

Ammoxidation catalysts

(ammoxidn. catalysts for propylene for preparation of acrylonitrile with high yield)

IT 107-13-1P, Acrylonitrile, preparation

RL: IMF (Industrial manufacture); PREP (Preparation)

(ammoxidn. catalysts for propylene for preparation of acrylonitrile with high yield)

IT 335233-33-5 335233-34-6 335233-35-7 335233-36-8

10/717846

335233-37-9 335233-38-0 335233-39-1 335233-40-4

335233-42-6

RL: CAT (Catalyst use); USES (Uses)

(silica-supported catalysts; ammoxidn. catalysts for propylene
for preparation of acrylonitrile with high yield)

L67 ANSWER 7 OF 7 HCAPLUS COPYRIGHT 2007 ACS on STN

ACCESSION NUMBER: 1998:394383 HCAPLUS Full-text

DOCUMENT NUMBER: 129:68144

TITLE: Catalysts for ammoxidation of propylene to
acrylonitrile

INVENTOR(S): Chen, Shin; Wu, Lianfa

PATENT ASSIGNEE(S): Chinese Petrochemical Industries Co., Ltd.,
Peop. Rep. China; Chinese Petrochemical
Industries, Shanghai Petrochemical Laboratory

SOURCE: Jpn. Kokai Tokkyo Koho, 11 pp.

CODEN: JKXXAF

DOCUMENT TYPE: Patent

LANGUAGE: Japanese

FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

PATENT NO. -----	KIND ----	DATE -----	APPLICATION NO. -----	DATE
JP 10156185	A	19980616	JP 1997-212289	1997 0806
			<--	
JP 3896194	B2	20070322		
CN 1172691	A	19980211	CN 1996-116453	1996 0806
			<--	
CN 1060410	B	20010110		
CN 1172689	A	19980211	CN 1996-116454	1996 0806
			<--	
CN 1059607	B	20001220		
CN 1172690	A	19980211	CN 1996-116455	1996 0806
			<--	
CN 1059608	B	20001220		
US 5834394	A	19981110	US 1997-904914	1997 0801
			<--	
PRIORITY APPLN. INFO.:			CN 1996-116453	A 1996 0806
			<--	
			CN 1996-116454	A 1996 0806
			<--	
			CN 1996-116455	A 1996 0806
			<--	

ED Entered STN: 27 Jun 1998

AB Title catalysts for fluidized-bed reaction comprise (A) AaBbCcDdNae FefBigMohOx (A = K, Rb, Cs, Tl, or their mixture; B = Mn, Mg, Sr, Ca, Ba, rare earth metals except Pr and Nd, or their mixture; C = P, As, B, Sb, Cr, W, V, or their mixture; D = Ni and/or Co, optionally Li, Pr and/or Nd, except simple combination of Co and Ni; a = 0.001-2.0, b = 0-4.5, c = 0.01-8.0, d = 0.01-22.0, e = 0.01-0.7, f = 0.01-8.0, g = 0.01-6.0, h = 8-16,

x = number of oxygen to satisfy valence of other elements) and (B) SiO₂ as a support. Thus, a mixture of 20% KNO₃ 9.0, 20% RbNO₃ 17.0, 20% CsNO₃ 7.0, and 20% NaNO₃ 18.5 g was treated with 1250 g of ammonia-stabilized SiO₂ sol, 4.2 g 85% H₃PO₄, a mixture of 19.7 g ammonium tungstate in 100 mL 5% NH₄OH and 374.7 g ammonium molybdate in 300 mL H₂O, and a mixture of Bi(NO₃)₃ 78.1, Mn(NO₃)₂ 51.9, Fe(NO₃)₃ 149.3, Co(NO₃)₂ 63.9, Ni(NO₃)₂ 215.0, Cr(NO₃)₃ 4.4, and Pr(NO₃)₃ 23.9 g in 70 mL H₂O. The obtained paste mixture was spray-dried and baked at 670° for 1 h to give a catalyst comprising Mol4.5W0.5Bi1.1Fe2.5Co1.5Ni5.0Mn1.0Cr0.3P0.25Na0.3K0.1Rb0.1Cs0.05P r1.0 + 50% SiO₂. A 1/1.2/9.8 mol mixture of propylene/NH₃/air was passed through a fluidized-bed reactor which contained the catalyst at 435° and 0.08 MPa with WWH 0.045, resulting in propylene conversion 98.5%, acrylonitrile selectivity 83.7%, and once-through acrylonitrile yield 82.4%.

IT 208931-76-4P

RL: CAT (Catalyst use); IMF (Industrial manufacture);

PREP (Preparation); USES (Uses)

(catalysts for ammoxidn. of propylene to acrylonitrile)

RN 208931-76-4 HCAPLUS

CN Bismuth cerium cesium chromium cobalt iron lithium manganese
molybdenum nickel potassium rubidium sodium tungsten oxide (9CI)
(CA INDEX NAME)

Component	Ratio	Component Registry Number
=====	=====	=====
O	x	17778-80-2
Bi	x	7440-69-9
Co	x	7440-48-4
Cr	x	7440-47-3
Cs	x	7440-46-2
Ce	x	7440-45-1
W	x	7440-33-7
Na	x	7440-23-5
Rb	x	7440-17-7
K	x	7440-09-7
Ni	x	7440-02-0
Mo	x	7439-98-7
Mn	x	7439-96-5
Li	x	7439-93-2
Fe	x	7439-89-6

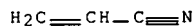
IT 107-13-1P, Acrylonitrile, preparation

RL: IMF (Industrial manufacture); PREP (Preparation)

(catalysts for ammoxidn. of propylene to acrylonitrile)

RN 107-13-1 HCAPLUS

CN 2-Propenenitrile (CA INDEX NAME)



IC ICM B01J027-192

ICS B01J023-88; C07C253-26; C07C255-08; C07B061-00

CC 35-2 (Chemistry of Synthetic High Polymers)

Section cross-reference(s): 67

IT Ammoxidation catalysts

(catalysts for ammoxidn. of propylene to acrylonitrile)

IT 208931-66-2P 208931-67-3P 208931-68-4P 208931-69-5P

208931-70-8P 208931-71-9P 208931-72-0P 208931-73-1P

208931-74-2P 208931-75-3P 208931-76-4P 208931-77-5P

208931-78-6P 208931-79-7P 208931-80-0P 208931-81-1P

208931-82-2P 208931-83-3P

RL: CAT (Catalyst use); IMF (Industrial manufacture);

PREP (Preparation); USES (Uses)

(catalysts for ammoxidn. of propylene to acrylonitrile)

10/717846

IT 107-13-1P, Acrylonitrile, preparation

RL: IMF (Industrial manufacture); PREP (Preparation)
(catalysts for ammoxidn. of propylene to acrylonitrile)

SEARCH HISTORY

=> d his nofile

(FILE 'HOME' ENTERED AT 10:09:20 ON 28 MAR 2007)

FILE 'HCAPLUS' ENTERED AT 10:09:26 ON 28 MAR 2007

E US20040110978/PN

L1 1 SEA ABB=ON PLU=ON US20040110978/PN
 D ALL
 SEL RN

FILE 'REGISTRY' ENTERED AT 10:11:22 ON 28 MAR 2007

L2 30 SEA ABB=ON PLU=ON (107-13-1/BI OR 115-07-1/BI OR
 1314-23-4/BI OR 1344-28-1/BI OR 13463-67-7/BI OR
 13494-80-9/BI OR 7439-89-6/BI OR 7439-93-2/BI OR
 7439-95-4/BI OR 7439-98-7/BI OR 7440-02-0/BI OR
 7440-09-7/BI OR 7440-17-7/BI OR 7440-23-5/BI OR
 7440-28-0/BI OR 7440-33-7/BI OR 7440-36-0/BI OR
 7440-42-8/BI OR 7440-45-1/BI OR 7440-46-2/BI OR
 7440-47-3/BI OR 7440-48-4/BI OR 7440-56-4/BI OR
 7440-66-6/BI OR 7440-69-9/BI OR 7440-70-2/BI OR
 7631-86-9/BI OR 7664-41-7/BI OR 7723-14-0/BI OR
 7782-44-7/BI)
 D SCAN

FILE 'HCAPLUS' ENTERED AT 10:13:23 ON 28 MAR 2007

E US2004-717846/APPS

E US2002-717846/APPS

E US2003-717846/APPS

L3 1 SEA ABB=ON PLU=ON US2003-717846/APPS
 D ALL

L4 1 SEA ABB=ON PLU=ON L1 AND L3
 DEL SELECT
 SEL AU

L5 66 SEA ABB=ON PLU=ON ("JEVNE, STEPHEN C."/AU OR
 "PAPARIZOS, CHRISTOS"/AU OR "SEELY, MICHAEL J."/AU)

L6 59 SEA ABB=ON PLU=ON L5 AND CATAL?
 E ACRYLONITRILE/CT

L7 1183 SEA ABB=ON PLU=ON "ACRYLONITRILE POLYMERS (INCLUDING
 COPOLYMERS)"/CT

L8 0 SEA ABB=ON PLU=ON L6 AND L7

L9 0 SEA ABB=ON PLU=ON L5 AND L7

FILE 'STNGUIDE' ENTERED AT 10:18:31 ON 28 MAR 2007

FILE 'ZCAPLUS' ENTERED AT 10:19:18 ON 28 MAR 2007

E JEVNE S/AU

L10 QUE ABB=ON PLU=ON JEVNE S?/AU

E SEELY M/AU

L11 QUE ABB=ON PLU=ON SEELY M?/AU

E STANDARD OIL/CO

L12 QUE ABB=ON PLU=ON "STANDARD OIL CO?"/PA,CS,SO,CO

E INNOVENE/CO

E INNOVENE USA/CO

L13 QUE ABB=ON PLU=ON "INNOVENE USA?"/PA,CS,SO,CO

FILE 'HCAPLUS' ENTERED AT 10:24:36 ON 28 MAR 2007

FILE 'ZCAPLUS' ENTERED AT 10:25:40 ON 28 MAR 2007

D QUE L5

E PAPARIZOS C/AU

L14 QUE ABB=ON PLU=ON PAPARIZOS C?/AU

L15 QUE ABB=ON PLU=ON L10 AND L11 AND L14

L16 QUE ABB=ON PLU=ON (L10 OR L11) OR L14

10/717846

L17 QUE ABB=ON PLU=ON L16 AND ((L12 OR L13))
L18 QUE ABB=ON PLU=ON (L12 OR L13)

FILE 'HCAPLUS' ENTERED AT 10:28:42 ON 28 MAR 2007

L19 2 SEA ABB=ON PLU=ON L10 AND L11 AND L14
D SCAN
DEL SEL
SEL RN

FILE 'REGISTRY' ENTERED AT 10:30:23 ON 28 MAR 2007

L20 49 SEA ABB=ON PLU=ON (107-13-1/BI OR 115-07-1/BI OR
7631-86-9/BI OR 10026-22-9/BI OR 10035-06-0/BI OR
12027-67-7/BI OR 12028-48-7/BI OR 13126-12-0/BI OR
1314-23-4/BI OR 1333-82-0/BI OR 1344-28-1/BI OR
13446-18-9/BI OR 13463-67-7/BI OR 13478-00-7/BI OR
13494-80-9/BI OR 16774-21-3/BI OR 697309-79-8/BI OR
697309-81-2/BI OR 697309-83-4/BI OR 697309-85-6/BI OR
697309-87-8/BI OR 697309-89-0/BI OR 7439-89-6/BI OR
7439-93-2/BI OR 7439-95-4/BI OR 7439-98-7/BI OR
7440-02-0/BI OR 7440-09-7/BI OR 7440-17-7/BI OR
7440-23-5/BI OR 7440-28-0/BI OR 7440-33-7/BI OR
7440-36-0/BI OR 7440-42-8/BI OR 7440-45-1/BI OR
7440-46-2/BI OR 7440-47-3/BI OR 7440-48-4/BI OR
7440-56-4/BI OR 7440-66-6/BI OR 7440-69-9/BI OR
7440-70-2/BI OR 7631-99-4/BI OR 7664-38-2/BI OR
7664-41-7/BI OR 7723-14-0/BI OR 7782-44-7/BI OR
7782-61-8/BI OR 7790-69-4/BI)
L21 49 SEA ABB=ON PLU=ON L2 OR L20
D SCAN

FILE 'HCAPLUS' ENTERED AT 10:31:26 ON 28 MAR 2007

L22 45 SEA ABB=ON PLU=ON L16 AND ((L12 OR L13))
E CATALYSTS/CT
E E3+ALL
L23 635119 SEA ABB=ON PLU=ON CATALYSTS+PFT,OLD,NT/CT
L24 35 SEA ABB=ON PLU=ON L22 AND L23
D SCAN L19
L25 0 SEA ABB=ON PLU=ON L24 AND L7

FILE 'REGISTRY' ENTERED AT 10:34:59 ON 28 MAR 2007

L26 1 SEA ABB=ON PLU=ON 107-13-1/RN
E ACRYLONITRILE/PCT
E ACRYL/PCT
E AC/PCT
D SCAN L26
D L26 PCT
D CN

FILE 'HCAPLUS' ENTERED AT 10:37:26 ON 28 MAR 2007

L27 98560 SEA ABB=ON PLU=ON L26 OR ACRYLONITRILE OR ACRYLON
L28 14 SEA ABB=ON PLU=ON L24 AND L27
D SCAN
DEL SEL
SEL RN

FILE 'REGISTRY' ENTERED AT 10:45:18 ON 28 MAR 2007

L29 147 SEA ABB=ON PLU=ON (107-13-1/BI OR 115-07-1/BI OR
115-11-7/BI OR 126-98-7/BI OR 7664-41-7/BI OR 7789-18-6
/BI OR 10035-06-0/BI OR 10377-66-9/BI OR 11118-57-3/BI
OR 1333-82-0/BI OR 13478-00-7/BI OR 13494-80-9/BI OR
7439-95-4/BI OR 7439-96-5/BI OR 7440-03-1/BI OR
7440-31-5/BI OR 7440-33-7/BI OR 7440-42-8/BI OR
7440-45-1/BI OR 7440-56-4/BI OR 7440-62-2/BI OR
7757-79-1/BI OR 10026-22-9/BI OR 11098-99-0/BI OR
11099-02-8/BI OR 11104-61-3/BI OR 12027-67-7/BI OR
12054-85-2/BI OR 12136-45-7/BI OR 1303-86-2/BI OR
1304-76-3/BI OR 1314-35-8/BI OR 1332-37-2/BI OR

13446-18-9/BI OR 199326-42-6/BI OR 199326-43-7/BI OR
 199326-45-9/BI OR 199326-46-0/BI OR 20281-00-9/BI OR
 56780-28-0/BI OR 74-98-6/BI OR 7429-90-5/BI OR
 7439-89-6/BI OR 7439-98-7/BI OR 7440-28-0/BI OR
 7440-32-6/BI OR 7440-36-0/BI OR 7440-38-2/BI OR
 7440-43-9/BI OR 7440-47-3/BI OR 7440-50-8/BI OR
 7440-66-6/BI OR 7440-67-7/BI OR 7440-69-9/BI OR
 7440-70-2/BI OR 7664-38-2/BI OR 7723-14-0/BI OR
 7782-61-8/BI OR 10043-35-3/BI OR 10141-05-6/BI OR
 10361-44-1/BI OR 10377-60-3/BI OR 10421-48-4/BI OR
 107-02-8/BI OR 11099-11-9/BI OR 11104-44-2/BI OR
 11129-60-5/BI OR 12028-48-7/BI OR 12627-00-8/BI OR
 12651-21-7/BI OR 12737-86-9/BI OR 12777-38-7/BI OR
 1305-78-8/BI OR 1306-19-0/BI OR 1307-96-6/BI OR
 1309-37-1/BI OR 1309-48-4/BI OR 1309-64-4/BI OR
 1310-53-8/BI OR 1313-13-9/BI OR 1313-27-5/BI OR
 1313-99-1/BI OR 13138-45-9/BI OR 1314-13-2/BI OR
 1314-23-4/BI OR 1314-56-3/BI OR 1314-60-9/BI OR
 1327-33-9/BI OR 1332-29-2/BI OR 1344-28-1/BI OR
 152325-79-6/BI OR 152325-80-9/BI OR 152325-81-0/BI OR
 152325-82-1/BI OR 152325-83-2/BI OR 155948-76-8/BI OR
 155948-78-0/BI OR 156260-89-8/BI OR 156260-90-1/BI OR
 167258-26-6/BI OR 167258-29-9/BI OR 167258-30-2/BI OR
 167258-31-3/BI OR 167258-32-4/BI OR 167258-33-5/BI OR
 167258-34-6/BI OR 167258-35-7/BI OR 199326-44

L30 160 SEA ABB=ON PLU=ON L21 OR L29

FILE 'HCAPLUS' ENTERED AT 10:47:17 ON 28 MAR 2007
 SAV L28 SAC846HCPIN/A

FILE 'REGISTRY' ENTERED AT 10:48:03 ON 28 MAR 2007

L31 0 SEA ABB=ON PLU=ON (K(L)CS(L)CE(L)CR(L)CO(L)NI(L)FE(L)
 BI(L)MO(L)O)/ELS(L)10/ELC.SUB
 L32 12 SEA ABB=ON PLU=ON (K(L)CS(L)CE(L)CR(L)CO(L)NI(L)FE(L)
 BI(L)MO(L)O)/ELS
 D SCAN
 L33 0 SEA ABB=ON PLU=ON L32 AND L30
 L34 31 SEA ABB=ON PLU=ON L30 AND MO
 D SCAN
 L35 38 SEA ABB=ON PLU=ON L30 AND TIS/CI
 D SCAN
 E A/CI
 L36 0 SEA ABB=ON PLU=ON L30 AND AYS/CI
 L37 6 SEA ABB=ON PLU=ON (RB OR NA OR LI OR TL)/ELS AND L32
 D SCAN
 L38 11 SEA ABB=ON PLU=ON (P OR SB OR TE OR B OR GE OR W OR
 CA OR MG OR LNTH/PG OR ACTN/PG)/ELS AND L32
 D SCAN
 L39 5 SEA ABB=ON PLU=ON L38 AND L37
 L40 12 SEA ABB=ON PLU=ON L32 OR (L37 OR L38 OR L39)

FILE 'HCAPLUS' ENTERED AT 11:09:50 ON 28 MAR 2007

L41 10 SEA ABB=ON PLU=ON L40
 L42 9 SEA ABB=ON PLU=ON L40/CAT
 D SCAN
 L43 0 SEA ABB=ON PLU=ON L42 AND L16

FILE 'HCAPLUS' ENTERED AT 11:12:27 ON 28 MAR 2007

FILE 'REGISTRY' ENTERED AT 11:14:04 ON 28 MAR 2007

D SCAN L2
 L44 7 SEA ABB=ON PLU=ON L32 AND P/ELS
 D SCAN
 D QUE
 L45 3 SEA ABB=ON PLU=ON L32 AND MG/ELS
 D SCAN

D SCAN L32

FILE 'HCAPLUS' ENTERED AT 11:31:28 ON 28 MAR 2007

D QUE L7

L46 29606 SEA ABB=ON PLU=ON ACRYLONITRILE+PFT,OLD,NT/CT

L47 5762 SEA ABB=ON PLU=ON L46 AND L23

L48 6 SEA ABB=ON PLU=ON L41 AND L47

D SCAN

L49 10 SEA ABB=ON PLU=ON L48 OR L42

D SCAN

D 1-10 AU

FILE 'STNGUIDE' ENTERED AT 11:41:49 ON 28 MAR 2007

L50 QUE ABB=ON PLU=ON PY<2003 OR PRY<2003 OR AY<2003 OR
MY<2003 OR REVIEW/DT

FILE 'HCAPLUS' ENTERED AT 11:43:48 ON 28 MAR 2007

L51 7 SEA ABB=ON PLU=ON L49 AND L50

SAV L28 SAC846HCP/A

FILE 'REGISTRY' ENTERED AT 11:44:52 ON 28 MAR 2007

SAV L40 SAC846REG/A

FILE 'HCAPLUS' ENTERED AT 11:45:40 ON 28 MAR 2007

FILE 'RAPRA, WPIX' ENTERED AT 11:46:58 ON 28 MAR 2007

L52 2 SEA ABB=ON PLU=ON L15

D 1-2 TI

L53 0 SEA ABB=ON PLU=ON L17

L54 72 SEA ABB=ON PLU=ON L16

L55 63 SEA ABB=ON PLU=ON L54 AND (CAT OR CATAL?)

L56 1 SEA ABB=ON PLU=ON L55 AND POLYMER?

D TI

D SCAN

L57 28 SEA ABB=ON PLU=ON L55 AND (?NITRIL? OR ACRYLON?)

D 1-28 KWIC

FILE 'STNGUIDE' ENTERED AT 11:51:28 ON 28 MAR 2007

FILE 'WPIX' ENTERED AT 11:53:17 ON 28 MAR 2007

D L57 1 ALL

D QUE L28

FILE 'HCAPLUS' ENTERED AT 11:56:38 ON 28 MAR 2007

L58 23 SEA ABB=ON PLU=ON L16 AND L23 AND L46

D SCAN

FILE 'STNGUIDE' ENTERED AT 11:57:11 ON 28 MAR 2007

FILE 'HCAPLUS' ENTERED AT 11:58:44 ON 28 MAR 2007

L59 24 SEA ABB=ON PLU=ON L28 OR L58

L60 24 SEA ABB=ON PLU=ON L59 AND L50

SAV L60 SAC846HCPIN/A

FILE 'RAPRA, WPIX' ENTERED AT 12:00:11 ON 28 MAR 2007

D QUE L57

L61 28 SEA ABB=ON PLU=ON L57 OR L52

L62 27 SEA ABB=ON PLU=ON L61 AND L50

SAV L62 SAC846IN/A

FILE 'STNGUIDE' ENTERED AT 12:02:26 ON 28 MAR 2007

D QUE L51

FILE 'HCAPLUS' ENTERED AT 12:30:53 ON 28 MAR 2007

FILE 'REGISTRY' ENTERED AT 12:32:12 ON 28 MAR 2007

L63 9 SEA ABB=ON PLU=ON L44 OR L45

10/717846

FILE 'HCAPLUS' ENTERED AT 12:32:24 ON 28 MAR 2007

L64 7 SEA ABB=ON PLU=ON L63/CAT
L65 7 SEA ABB=ON PLU=ON L64 AND L49
L66 10 SEA ABB=ON PLU=ON L64 OR L49
D QUE
D QUE L49
L67 7 SEA ABB=ON PLU=ON L66 AND L50
SAV L67 SAC846HCP/A

FILE 'STNGUIDE' ENTERED AT 12:35:14 ON 28 MAR 2007

D QUE L60
D QUE L62
D QUE L60
D QUE L40
D QUE L60
D QUE L62

FILE 'HCAPLUS, WPIX' ENTERED AT 12:40:15 ON 28 MAR 2007

L68 32 DUP REM L60 L62 (19 DUPLICATES REMOVED)
ANSWERS '1-24' FROM FILE HCAPLUS
ANSWERS '25-32' FROM FILE WPIX
D L68 1-32 IBIB AB
D QUE L40
D QUE L63
D QUE L67
D L67 1-7 IBIB ED ABS HITSTR HITIND